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THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

# COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

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## GMIS Seeks \$300,000 For Clearinghouse Plan

Coy West Coast Bureau

**LONG BEACH, Calif.** — The Government Management Information Sciences Users Group (GMIS) plans to seek \$300,000 in federal funding to set up a technical clearinghouse for the transfer of computer software techniques among state and local government users.

Alvin L. Atkinson, chairman of GMIS Project '74, said the GMIS executive board last week had authorized Project '74 to seek the funding.

By mid-June, he said, the proposals for funding will be before the executive board for review and adoption.

The proposals will then be submitted to the Law Enforcement Assistance Agency (LEAA) for \$200,000 and the National Science Foundation (NSF) for \$100,000.

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## Catamore Antitrust Claim Ruled Separate Action

**PROVIDENCE, R.I.** — A U.S. District Judge here has denied the motion of Catamore Enterprises to amend its counterclaim against IBM to include antitrust charges [CW, May 22], but the firm said it would file a separate antitrust action against IBM.

However, Judge Raymond Pettine allowed the firm to amend the counterclaim to include eight separate charges of fraudulent practices on the part of IBM. The judge ruled against the inclusion of the antitrust issues on the grounds they were unrelated to the original IBM charge against Catamore for payment of back rent.

"The claim for treble damages under the Sherman and Clayton Acts involves a separate and distinct transaction," he said in his ruling.

Catamore said it was "pleased" the judge had allowed the first eight parts of the counterclaim to stand since they increase the amount sought from IBM from \$5 million to \$15 million.

In reaction, IBM said, "We feel the antitrust counterclaim was totally without merit and are pleased the judge denied Catamore's motion on this point."

## On the Inside This Week

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## Increasing On-Line Uses Require Special Care

By Patrick Ward

**HARTFORD, Conn.** — Now that DP users have come to depend increasingly on on-line systems, the danger they face from power outages or brownouts has become even more significant, panelists at a power supply symposium here agreed.

"We all strive for stable, constant power, but we're not always going to have it," David H. Berg, vice-president of the Hartford Insurance Group, told attendees at the symposium held at the Actua Life Insurance Co.

The user need for a stable power supply is greater all the time because of increasing computer dependency on DP and because of the need for real-time processing which have no alternative if the central CPU is down, Berg observed.

And the trend to large CPUs in a multiprogramming environment is "putting a lot of eggs in one basket," he added.

"Each user should critically evaluate his applications, especially those involving on-line data base," to minimize the effect of power failure, said John Roberts, manager of environmental responsibility with IBM.

Roberts said IBM had conducted extensive monitoring tests in the late Sixties and early Seventies to determine what sort of power supply problems its users would have to deal with, and then used the data for simulation testing.

The firm may start a new round of monitoring to see if the power supply situation has changed much in the meantime, Roberts added.

A power loss not only brings the computer down, Berg pointed out, but also its environmental and security support.

So a DP manager planning to handle power breakdowns should plan closely with his firm's air conditioning, elevator and security people, as well as his vendor and utility

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## Living With Power Shortages

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So a DP manager planning to handle power breakdowns should plan closely with his firm's air conditioning, elevator and security people, as well as his vendor and utility

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## Strike Endangers West's Paper Supplies

### Users Urged to Cut Consumption

By Marvin Smallmizir

CW West Coast Bureau

**LOS ANGELES** — Users in the West face a critical shortage of printout paper that could further endanger a four-week-old strike at four West Coast mills of Boise Cascade Corp., Boise, Idaho.

Boise is a major producer of computer paper and two of the struck mills make computer paper.

Distributors of paper and business forms are cautioning many users to take their supplies wisely and institute procedures that will reduce consumption.

*Pretty Serious*

Thomas McLenore, western division manager of Unicor, a western business manager of Unicor, described the situation as "pretty serious."

He said Unicor has had to reduce sales of printout paper by a substantial amount and if the strike goes on another two to daily weeks, Unicor will probably have to cut it off completely.

"We've added measures to make sure any reprints are necessary and defer reports until the strike is over and cut down the number of copies, if possible. One of the best tricks is converting a printer from six line/in. to eight line/in.," he said.

Another business forms supplier said the situation is "verging on the extremely serious."

He urged temporary use of routing slips to increase the mileage obtained from one-printout.

The strike began May 6 and a Boise Cascade spokesman said negotiations have been broken off since the company's last offer.

No progress has been made in negotiations, according to the striking union, the Association of Western Pulp & Paper Workers.

Dan Curtis, district manager in Los Angeles for Varian Graphics Corp., a West Coast forms supplier, said the shortage was "very serious" even before the strike, ever since ecology programs forced the closing of mills because of river clean-up regulations.

An extended strike could force suspension of some computer operations and the only alternative now is to use paper more wisely.

W.K. Hayes, manager of data processing coordination and control for Occidental

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## On Government-Wide Basis

## GSA Office to Push CPE

By Don Leavitt

Of the CW Staff

**ATLANTA** — The General Services Administration (GSA) plans to establish a performance evaluation office to "meet the need for a government-wide program aiming at improving the performance of government installations," according to Warren E. Burton, deputy GSA commissioner.

Keynoting the recent meeting of the Performance Evaluation Users Group (CPEUG), Burton gave no time-

table for the setting-up of the new office. Once in place, however, it would "encourage" the increased emphasis by top managers on the use of computer performance evaluation (CPE) techniques, he said.

### Power to Push

The new office will apparently have power to push where pushing seems needed. The program is aimed at "ensuring" federal agencies' use of performance improvement techniques in both the acquisition of new equipment and in the "preparation of comprehensive and detailed guidelines" for the agencies to improve the performance of operational DP installations, Burton noted.

This effort will complement the operational capability of the Federal Simulation Center (Fedsim) which identifies dramatic improvements in DP performances through individual CPE projects," he added. It would also appear to complement the efforts of the General Accounting Office to make CPE part of the audit procedure in most government DP installations.

By collecting, categorizing and circulating performance evaluation findings as they are individually developed, they can be "applied to similar DP operations" on a government-wide basis, the keynoter explained. He did not elaborate on the ways in which the findings might be

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## Printers Assured Lifetime Jobs Despite Total Paper Automation

By E. Drake Lundell Jr.

Of the CW Staff

**NEW YORK** — The threat of worker displacement by automation was clearly highlighted in a contract agreement between printers and the two major daily newspapers here.

Under the 11-year contract signed between the New York Times, the New York Daily News, and the New York Typographical Union Number 6, the new system will be allowed to fully automate their printing operations, but will have to guarantee jobs to all union members for their lifetimes.

The settlement, which could well set a precedent, was reached after almost 14

months of negotiations during which the issue of automation was the most controversial.

The negotiations were marred by a strike, a lockout by the Daily News, which occurred after union members refused to handle computer-set type. The News was forced to turn to a computer system to publish — possibly the first use ever of a computer system as a "strike-breaker."

### More to Come?

The clash between the printers and publishers here may be a prototype of future conflicts, observers said, that will arise (Continued on Page 4)

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## Help Set Policy, Implement It

# GMIS Urges 'Local Participation' in Privacy Legislation

By Marvin Smalheiser

CW West Coast Bureau

**LONG BEACH, Calif.** — Legislators grappling with privacy and security legislation were urged to make some provision for local involvement in the implementation of that legislation.

The message came from speakers at the spring conference of the Government Management Information Sciences (GMIS) user group aboard the Queen Mary.

Andrews O. Atkinson, executive director of GMIS, asked for "greater local government participation at the policy-making level."

Atkinson also advocated a local information systems board to facilitate the management of any bill that is eventually passed.

Establishment of a general right to privacy as opposed to multiple legislation for specific privacy problems was also asked by Atkinson.

GMIS has its own model legislation for a fair information practices act which is

similar in many respects to many other bills, although Atkinson said other bills lack local representation on the policy board and advisory committee.

"Since most information stored at the state and federal levels originates from local governments, it is important that local governments have a representative role on boards and/or committees created by federal legislation."

Gene Dial of the University of Colorado, who recently completed a booklet on guidelines for security and privacy, also urged public participation and commitment to privacy legislation.

Dial said however, that "people aren't aroused about privacy as some of our leaders would have us believe."

"Most people will sell their right to privacy down the drain to get a loan, a mortgage or driver's license," he said.

He called for a "fairness board" with repre-

sentatives of government, the media, civil libertarians and attorneys to learn the ramifications of procedures at the local level.

He said the line between security and privacy has to be drawn locally," he said.

Richard Seymour, DP division program manager — data security and privacy of IBM, spoke about Project Safe (Security Automated Facility Environment) and said the committee is the only practical way to meet some of the objectives of legislation such as logging access and keeping track of records.

"We need more to be concerned with the insider who needs to know information," he cautioned.

"It's a determined insider who is the real problem and is most often involved

in misuse."

Seymour said the Safe study results have not found any magic or breakthrough but rather confirmed many earlier ideas.

A secure system, he said, was found to be originally more expensive to run, and not significantly more expensive.

"The secure system was more reliable and efficient," he said.

The installation task, Seymour said, is

more like a major new application than a new release of OS.

Generally, he said, the user is "not sensitive to basic risks or protective measures and resists any reduction in utility."

Education is required for users in individual risk analysis, he added, and Seymour added that users generally opt for usability over security.

The Safe study will be available in July or August, he said.

## Funds Sought for Clearinghouse

(Continued from Page 1)

The goal of the clearinghouse project, launched earlier this year [CW, March 27], is to select existing application packages and adapt them into common packages that could be transferred from one state or local government user to another.

Where no existing package could be modified, a new one would be developed.

Funding is the biggest problem now, according to Atkinson, who is trying to set up the clearinghouse, said Atkinson, who spoke at the GMIS meeting here aboard the Queen Mary.

"To get the program in operation we need two to three full-time technical personnel dedicated to instituting the national clearinghouse."

Vendor response to the effort to increase the transferability of existing packages, Atkinson said, has been to offer "guarded support."

He said the approach is optimistic that GMIS will make definite progress with the project this year.

GMIS membership is unified behind the project, he said, and there has been sufficient endorsement from vendors so that "significant progress can be made."

Atkinson cited the plan in Cincinnati and Hamilton County, Ohio, to convert existing, proven programs into a highly transferable form on new computers and to develop new strategies identified in GMIS research studies.

"This way, programs we have developed will have a high degree of transferability," he said.

"We feel other users will do the same. But it cannot be effective without a clearinghouse, standard procedures and institutions documenting."

Atkinson said he feels it is possible to elevate technical transferability well above 90%.

He emphasized the need for vendor involvement and support to develop transfer strategy and to advise on the usability of their software systems.

## Power Critical for Increasing On-Line Applications

(Continued from Page 1)

representatives, Berg said.

Recovery time depends both on the availability of hardware and the people involved, Berg noted, and also on how long it will take the user to catch up on his workload.

"Once we have a system we can work with, do we know which job is more critical? Do we have a plan? We know which machines are going to be brought up first," Berg said. "Procedures, Contingency plans ought to be in place well ahead of time, with prepared procedures ready just like a fire drill routine, he said.

### Technical Alternatives

DP manager has a number of technical alternatives in safeguarding his power supply, Sam Starr, a partner in Jansen & Rogan, consulting engineers, told the group. One of these is monitoring both the system's external power supply and the internal power supply the DP system. Problems can occur in either one, he noted.

However, he noted, the ability of DP equipment to handle power line problems and surges has improved over the years and a lot of power line equipment has its own voltage regulators.

DP managers should try to design their in-house power systems as well as possible to withstand power outages.

sible, he said. If problems do come up, the system should be able to contain them so only a part of the DP equipment goes down.

### New England Safe

HARTFORD, Conn. — New England DP managers should not have to worry about power outages and brownouts this summer, Albert LaPlant, manager of communications and data processing for Northeast Utilities, told a recent power supply symposium at Actis Life Insurance Co. here.

LaPlant said New England utilities have the capacity to meet user demand in the absence of a string of unexpected coincidences such as extreme use of cooling equipment, unusual drought and excessive power plant breakdowns.

In the internal design, Starr noted, the power system has the potential of additional loadings in its building.

"Of course, it is desirable to completely isolate the CPU system's power, but this can cost more and so it may be frowned on." And it is not always a necessary step, Starr noted.

DP managers also have to determine, based on a dollar-and-centic and "seat-of-the-pants" basis, whether they need any sort of buffering to improve the quality

of the utility power coming into their computers, he mentioned.

Alternatives include a booster auto transformer which can raise voltage by a factor of two or three, a battery and a solid state voltage regulator and electric motor generator, which take the utility's power and produce a constant voltage level for the computer's use.

A diesel-powered generator can produce power for both CPU and environmental supporting power, long enough and an uninterrupted power supply (UPS) can both electronically filter incoming voltage and provide a battery for orderly CPU shutdown.

All these alternatives cost money, and the UPS especially can add 20% to the computer system's power consumption, Starr noted.

Can the utility's past good performance necessarily be a guide to the future? Starr questioned. No one expected the great Northeast blackout.

An engineer reminded him it's not enough to have a generator on hand. Users must regularly check and maintain them too. Albert LaPlant of Northeast Utilities agreed, mentioning that 30% of the users who had generators before the famous Northeast blackout could not start their equipment because of a lack of preventive maintenance.

LaPlant, who is manager of communications and development, energy consulting services department, noted his utility provides a power network in central Hartford with multi-core cables and transforms back to the customer's lower voltage. If one cable were to go down, the customer's service would be unimpacted, he said, adding this network concept is the accepted practice for utilities serving central business districts.

On the fringe area, though, the power customer usually depends on a single cable or transformer but can order optional backup and switching capability if he wants it.

Obtaining this backup is more difficult in a rural area, he mentioned.

## Open School Files Key to 2 Bills

WASHINGTON, D.C. — House and Senate conferees will meet next week to resolve differences in bills authorizing federal funding to local school districts and colleges and colleges.

The main difference between the two bills concerns an amendment passed by an overwhelming Senate vote that would deny federal funds to school districts or colleges that prohibit a parent from specifying all records on his child, including computerized records.

While no estimate is available to indicate

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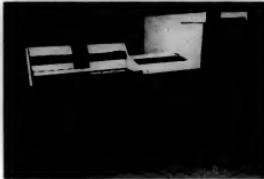
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# MEMOREX

## N.Y. Printers Have Lifetime Jobs, Despite Computer

(Continued from Page 1)

when automation equipment can be used less expensively than human workers, therefore causing dislocations in the present workforce.

The dispute between the union and the publishers — called a "collision of union and management compulsions" by labor reporter A.H. Raskin of the *Times* — was basically a fight for survival.

Several mainly nonunion newspapers over the past few years have been automating their printing operations, often slashing costs even though there have been several false starts in the area.

However, in New York the union won the right to block automation efforts after a crippling 114-day strike in 1962 and 1963, a decision the publishers of the papers involved in the negotiations fear.

Faced with rising labor and other costs, the publishers felt they had to automate their printing operations in order to survive, but the union felt itself threatened and its future clearly in doubt if the automation was allowed to proceed.

"What's at issue in the present discord is the conviction of both sides that the outcome literally will determine their institutional future — even whether the papers or the union have a future," Raskin wrote before the contract was negotiated.

"For the publishers, the 'must' element in these negotiations is a free hand to introduce computerized typesetting and other forms of automation into their composing rooms, still geared to techniques developed in the 19th century and unchanged since Ottmar Mergenthaler invented the Linotype machine in 1886," Raskin said.

"For the union . . . one of whose members operated the first Linotype ever to set an article for publication, the use of automated typesetting raises fears not only of the destruction of jobs and prized skills but also of the organization's own consignment to the slag heap," he added.

With these economic and psychological drives behind each side, a settlement seemed almost impossible — a situation severely aggravated when the *Daily News* moved its automation equipment later to New York City plant, which led to a 17-day walkout on the part of the typographers.

The paper continued to publish, however, moving completely to an automated system, leading union members to call the computer system a "scab" or strike-breaker.

The break in the negotiations came last week during a 9-1/2 hour bargaining session, but still has to be ratified by union members.

Called an "occurrence of tremendous importance" in the history of collective bargaining by labor mediator Theodore W. Kheel, who helped work out the pact, the agreement includes the following:

• The printers will be able to employ "any technological device to increase the efficiency of their operations," and are under no manpower restrictions in the operation of the equipment.

• About 1,800 of the 2,100 union members of the two unions will receive a "lifetime guarantee of employment" and couldn't be fired for any reason, even though they could be suspended without pay with the length of the suspension determined by arbitration. Reductions in the workforce can only come through attrition.

• In order to encourage retirement of

all printers a "six-month productivity leave" after which the printer could return to work if he didn't find other work.

• Printers who retire within six months of the contract verification would get a \$2,500 bonus in addition to the six-month leave with pay.

A host of standard wage increase proposals was also included in the agreement.

Presently there is no standard retirement age for printers at the papers and none will be imposed. The average age of the printers affected by the agreement is 56, the union said.

The *Times* and the *News* both said they would start moving in automation equipment to handle their printing functions immediately upon ratification of the pact.

## GSA Office to Push CPE Methods

(Continued from Page 1)

"Applied," nor on what characteristics — CPU, operating system, workload — would be used to recognize "similar" operations.

Although the GSA project is intended as a model for government installations, its findings will "undoubtedly" become available to the general DP community, "through channels such as CPEUG, Computerworld and ED&P Performance Review," one of Burton's listeners remarked last week.

In addition, he noted, once government installations really start pushing for more effective hardware and software, the entire DP community should reap direct benefits.

### Mixed Feelings

Burton set the stage for his announcement of GSA's new effort by saying he was both proud of the past accomplishments of the CPE professionals and disappointed by them.

"Your efforts have resulted in millions of dollars in savings, and a continual shortening of the DP acquisition cycle," he admitted.

"But we've hardly scratched the surface of potential savings," Burton said, dropping the other shoe, "because performance evaluation has not been sold to agency policy makers and financial managers."

He knew that often for an investment of \$50,000, performance evaluation can save hundreds of thousands of dollars. But before we can produce savings, someone has to stake us. And that stake has to come from the top — from both policy and budgetary sides of the house," Burton said.

### Educate Top Managers

"We have to educate top managers in a language they can understand — dollars and cents, and return-on-investment," he noted.

Burton was filling in for M.S. Meeker, the GSA commissioner who heads the Automated Data and Telecommunications Service, in which the new CPE support-office will be located.

About 140 people from government and "civilian" DP installations attended the two-and-a-half-day CPEUG meeting at the Sheraton Biltmore Hotel.

## Strike Endangers Paper Supplies

(Continued from Page 1)

Life Insurance Co., reported a cutback in paper use throughout the company and said he is trying to find firms that can recycle it.

He said the company is also researching the 1,000 applications at the data processing center to find those that use large amounts of paper. The idea is to put as many as possible on microfilm and microfiche.

The company has already gone from six line/in. to eight line/in. printers and is using an experimental printer that uses 8-1/2 in. by 11 in. paper.

Tug Tamura, general manager of the Data Service Bureau, (DSB) of the City of

Los Angeles, said while the strike hasn't affected supplies yet, DSB is reevaluating more extended use of computer output microfilm and new printers using less paper.

### Costs Rising

"Paper costs are up 30% to 40%, lead times are longer and we are carrying longer inventories," Tamura said.

R.L. James, assistant to the director of corporate information services, Union Oil Co., said, "We have no problem but we are doing volume buying to anticipate a paper shortage. The only problem is a little delay in receipt of deliveries so we have to give a longer lead time on orders."

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## Well Under Theoretical Limits

# Survey Finds DOS, OS Multijobs Average Just Over 2

By Vic Farmer  
Of the CW Staff

**CHERRY HILL, N.J.** — Multiprogramming users with 70% or more batch operations may be deluding themselves if they think that are coming anywhere near actually utilizing the theoretical limits of 15 jobs and 3 partitions for OS and DOS respectively.

In a survey of 31 IBM 360 and 370 users taken recently by Value Computing, Inc., the average number of jobs running at one time was just over two.

"Of course, you must take into consideration the operating system storage requirement, and the type of work being processed," Vincent J. Bannan, president of the software firm, cautioned. "For these factors do have an effect on the multiprogramming concurrency level."

Operations people feel they may be running well ahead of this average but the cold hard facts will probably disprove it

when users tally and average a month's worth of operation statistics," he added.

### Three Groups

The survey, which divided users into three groups of respondents, 19 DOS users with at least 70% batch production and at least 5M bytes of memory, 12 DOS users with at least 70% batch production and no special core requirement, and 18 OS and DOS sites operating in less than a 70% batch production environment.

The first group had a mean average of 2.78 jobs running at all times, but this figure was skewed by the third group of users operating less than 70% batch. This group often has a high percentage of testing and remote job entry, according to Bannan.

The second group — OS and 70% batch or more — showed a disappointing average of only 2.34 jobs running at one time, according to Bannan. And the high in this

group was 4.08 average. Bannan attributed this poor multiprogramming average to an attitude by many programmers that under OS, programmers do not overly concern themselves with core and partition constraints to the same degree as DOS programmers.

In a sense, the programs are written almost ignoring any attempt to conserve requirements.

### A Better Average

The DOS group had a better average of 1.8 jobs in comparison with the theoretical limit of three partitions available with standard DOS. Here, in this group, two companies maintained a high average of 2.99 jobs concurrently.

It would be noted that in a standard DOS system as it comes from IBM you could probably never achieve this measure of concurrency," Bannan noted.

The high utilization rates are due mainly to the use of proprietary software that serves to broaden the number of partitions and possible levels of concurrency.

In the DOS group, users without 70% batch production, the group average was much higher at 3.9 jobs running at all times, with a user scoring a high of 8.84.

"If operations are not constrained by large interrelated job streams with predecessor relationships, user-time requirements and special file setups, a multiprogramming system can achieve a greater degree of multiprogramming," Bannan explained.

### Operators at Site

As a sidebar, one of the questions on the survey asked how many operators were at the site and how many tape and disk drives were installed. The average of all users surveyed revealed one operator was normally assigned to handle six peripheral devices per shift. But this measurement had wide extremes that ran from one operator/two devices to one operator/14 devices.

Bannan also noted that results of a similar survey among users of his company's computer scheduling and control system indicated a 30% better multiprogramming concurrency than users who relied on operator intuition.

## Effort to Sell Viatron Unsuccessful to Date

**BOSTON** — Viatron Computer Systems Corp.'s court-appointed trustee [CW, April 17] has been unable to sell the company as "a going concern."

Boston lawyer R. Robert Popeo, who has been operating Viatron as its trustee, solicited bids from other companies to buy Viatron.

Producers would go to the company's creditors, whose claims total over \$20 million.

However, Popeo said the bids he received were "unsatisfactory."

A group of Viatron debenture holders presented an alternate plan of reorganization under which most creditors would receive a new issue of Viatron common stock as payment.

There will be a hearing on both matters in federal court in Boston June 12.

Viatron has been in bankruptcy proceedings since February 1971.

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## Two Managers Tell Seminar

# More Responsibility, Better Pay Hold DP Operators

By Patrick Ward

On the CW Staff

**CHICAGO** More responsibility and better pay can prevent the loss of experienced computer operators to other organizations, two speakers at a recent seminar here agreed.

Eugene V. O'Halloran, senior manager of computer operations at Chicago's Blue Cross Association, and Jack Graham, DP manager for Franklin Life Insurance, described the steps their installations have taken to keep their operators.

O'Halloran considers good, experienced operators such an asset "that it blows my mind when I see them leave for programming for \$1,500 more a year."

"Nine out of 10 [operators] who go into programming would rather stay in operations, but the money is in programming," O'Halloran commented.

The association urges the experienced members of its 14-man operations staff to

make decisions on their own, and not wait for supervisors, he said.

Now operators take part in diagnosing problems, he noted, but they gain this capability as they go through training.

Besides participating in management and supervisory work, the association's computer operators also form part of the teams that go to remote sites to install permanent equipment and train people there.

### Who's Needed More?

But "we do reluctantly," O'Halloran said, because he said he can't take an operator off the job for a day as easily as he can a programmer.

Through Blue Cross Association computer operators have a formal review once a year to determine pay, the association also holds bimonthly evaluation sessions with the operators to keep both supervisors and operators in touch with the

operators' strengths and weaknesses.

If he had his own way, O'Halloran said, operators would be paid as much as programmers.

Operators even do some rating of work by systems and programming people, O'Halloran noted.

Starting salary for operators in his installation was \$120/week two years ago, O'Halloran stated. It is now about \$155/week and he is hoping for \$175 next year.

Jack Graham of Franklin Life Insurance feels his firm has given operators "more decision-making, more voice in the way things should be done."

At Franklin Life, computer operators are twice as likely as any other group to earn money in the company's suggestion plan, he said.

A senior operator at Franklin Life can follow one of three career paths, Graham noted. He can become a shift supervisor, a systems programmer trainee or he can

turn to applications programming — a sideways step financially, Graham noted. Of course, the other side of the coin is approaches to the problem of getting their firms' top management to forecast their expected DP needs for the next two to five years.

Graham said the vice-president in charge of DP and others in the department first must come up with a plan of what they should be doing in five years and what this would cost, and then submit the plan for approval.

At the Blue Cross Association, the vice-president of DP and telecommunications services takes part in the association's strategic planning for a three-year or more period and then comes back for full sessions with the department to judge how the plan will impact their DP. If top management approves the DP department's assessment, "that's the strategy we follow," O'Halloran noted.

## Simulation Models Cause Controversy Over Freeway Plan

By Robert Glass

Special to Computerworld

**SEATTLE** — A series of computerized simulation models used by the Puget Sound Governmental Conference (PSGC) to make population distribution forecasts is smack in the middle of a freeway controversy here.

The programs themselves are not being challenged, but the results have become a political football between pro- and anti-freeway advocates, and between city and King County officials.

King County executive John Spellman, concerned over the need for an expanded Interstate 90 highway from Lake Washington from suburban Bellevue to Seattle, lashed the PSGC report on the grounds that it "skipped over too lightly" the relationship of I-90 to Seattle.

The PSGC report requested by the Washington State Highway Commission after years of Seattle freeway opposition, has virtually permanently stopped I-90 construction, showing that the construction of I-90 would have only slight impact on the affected areas. By 1990, the population impact as computed in the report would be less than 4%, the job impact, 2%, and the travel impact, 1%.

However, in a position paper accompanying the report, PSGC noted its "reaffirmation" of a "past commitment" to I-90 based on the "critical need for improved traffic safety and dependability of the I-90 corridor, and on the need for transit."

I-90 is particularly controversial, because it follows the route of Seattle's famous floating bridge across Lake Washington, and because it involves considerable cutting and filling.

The expansion plan for I-90 involves adding four highway and two transit lanes.

Several simulation models served as the basis for the PSGC report, according to Tom Byron of PSGC's Research Division. Transportation data was generated by U.S. Department of Transportation programs using Seattle input data describing road network intersections, speeds and capacities.

Economic base predictions were made using a model for the Puget Sound region based on similar programs used by other cities.

But the allocation of results to municipal regions, from which the "minimal impact" data emerged, came from an activity allocation simulation model called Empiric, developed for PSGC by a computing software firm. PSGC's use of Empiric involved using 1970 census population data, and an employment land use and origin-destination data developed by PSGC for the Puget Sound area.

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**Editorials****A Two-Way Voice**

The Afips board of directors was well advised to kill the idea of an Information Processing Board to interface with government leaders—but this move should not stop the organization from establishing some sort of Washington presence soon.

The Information Processing Board idea involved essentially one-way communication—from government personnel to the heads of the Afips constituent societies. That may well have been ego gratifying to those involved, but would hardly have provided the computer community with a voice on the national level.

That voice is needed now. But it must be effective, well-funded and involve two-way communication between government officials and the computer community.

The responsibility is clearly with Afips and we hope the organization will be able to come up with a well-thought-out, effective plan in time for its next board meeting.

**Nagging Thought**

A nagging thought persists regarding a statement made during a privacy session of the National Computer Conference.

The proprietor of a credit bureau reported that the Fair Credit Reporting Act, which became law three years ago, brought a 100-fold increase in consumer inquiries. Ostensibly, many of these inquiries came from people who had been denied credit, but who did not realize the reason was the existence of a negative report from the bureau.

The proprietor boasted that "only one third" of the 200,000 yearly inquiries resulted in corrections (and only 1/20th of those who had been denied credit actually inquired!)

Where are we going that an error rate of 33% on a scale that great is even tolerated, let alone considered exemplary?

**Uxbridge**

Three hundred and fifty years ago Izaak Walton wrote about fish and fishermen, at an inn on the banks of the Thames at Marlow, chose to stay at that inn, now a luxury country hotel called the Count Pleasant Angler, and to drive in some 20 miles to the European Computing Congress at Brunel University in Uxbridge. The hills are out, and vast numbers of towering chestnut trees are in blossom. Daffodils are out, and piebald my breakfast toast, at the foot of the lawn!

A greater change from Chicago and the Palmer House one could hardly imagine. And of course Eurocomp is also different: smaller, younger, situated at a technical standard (with most exhibits in a tent structure). The sessions for papers, though, run about the same: great titles and abstracts, moderate content, pallid discussion.

Important to me because of my Caravan and NCC connections, and of course vital to the conference organizers here, is disappearance of the IBM at the famous Hanover Fair earlier in the year. Not many people showed up than were expected. Wasn't the exhibits, in either case. At Brunel there was a richer IBM show than at Chicago: three complete System/3 installations, a big System/7, much new disk stuff, and lots of other similarities. Including some gear from IBM France. Burroughs had a nice 1700, NCR was out in full force, with its MOS-built 151, Xerox (Rank Xerox here) had a handsome stand. Honeywell was present, which it was not in Chicago.

One notable feature was a verification system from NFL—pause here, to watch a swan glide by on the river outside my window—that's the National Physical La-BORR+tree, like our NBS. Would

work with a microprocessor in practical application, plus one or more sensitive elements called Datapads.

The booth bins were attractive indeed. The chief names I can remember, shown: black and white for Burroughs, brown (1) for IBM, and so on. There they exercise their feminine wiles much more discretely than in McCormick Place, but they do exercise them. Also I'm somewhat of a foot fetishist, and the far-out footgear gives me fits!

The glory of Brunel is not its buildings which, although quite new, are already badly chipped; nor its tents or parking lots, certainly: not even its small but well-known computer service faculty. It is a chief name Eric, who does the greatest rounds, before all else, not just for computer people, of course, but for other university functions as well.

The high point of English visits for me is always seeing friends, in town as well as at conferences. They ranged this time from Nancy Foy, whom I had been with to see the first time in 1968, to Renzo de Ferranti. Not to mention a Brunel security guard who remembered giving me a warning notice two years before—and Eric!



*Herb Gross*



'Mark My Words! The First Three Things They're Going to Do With It Are Figure Out How to Beat Bobby Fischer, Design a Car That Runs on Borsch, and Jam Our Tracking of Their Tracking of Our Spy-in-the-Sky!'

**Letters to the Editor****Century Upgrades****Cause No Problems**

Herb Gross appears to be skeptical about the ease of upgrading from the NCR Century 100 to the Century 200. Let me relate our experience and he can judge for himself.

Our 16K Century 100 had been in operation for about four

years. Our decision to upgrade to a 32K Century 200 system created quite a furor because most of us involved had been through at least one upgrade at IBM and at Univac computers. Let me relate our experience and he can judge for himself.

Our client files (approximately 1,000), programs (approximately 800) and control strings (approximately 150) were contained on 42 active 655-type disk packs. Our new computer would use the same type of disk drives but we still had many reservations.

We arranged with NCR to move our Century 100 to an other area over a weekend and then to set up the Century 200 in our regular computer room. The Century 100 move was accomplished on a Saturday and the Century 200 was delivered on a Monday. On Thursday afternoon the Century 200 was certified ready for use. Because of the short time period of the month and the Century 100 was loaded down we threw caution to the winds and decided to convert to the Century 200.

Total conversion time—three minutes.

**Conversion procedure:**

1. Remove disk packs from Century 100.
2. Mount disk packs on Century 200.
3. Start up Century 200.
4. Run.

When we had the chance we converted programs where the instructions were a hardware feature on the 200 and a software feature on the 100, or programs which were overlayed because we were running 200 to 30K programs on a 16K system.

Some programs have never been recompiled because we took advantage of one of many NCR compile options. When we decided to upgrade we made it a standard for all programs

compiled on the 100 to also generate the alternate 200 hardware instructions. The program memory size requirements were increased slightly but the program would run on the 100 using 100 software or on the 200 using 200 hardware.

Would you believe—upward and downward compatibility!

Our biggest problem, in fact our only problem, was to get NCR to move the Century 100 from our premises.

D.L. Syriga

Western Computing Ltd.  
Edmonton, Alta.

**Mistakes Corrected  
in Review Manual**

We read with interest "Some Not-So-Nice Words on CDP Examination" contained on Page 14 of the May 1 issue.

Regarding the complaint about mistakes in the *CDP Review Manual*: *Designing and Using Handbook* (New York: Mason & Lipscomb Publishers, 1972): The first edition of any publication invariably contains a few minor errors. We are endeavoring to correct these errors in the revised edition which will be published in the near future.

The *McGraw-Hill Henderson CDP Review Manual* contains three paragraphs describing break-even analysis: on page 174 in the chapter on general management, on page 374 in the chapter on accounting and on page 435 in the chapter on mathematics.

We would appreciate receiving an elaboration of the criticism which apparently pertains to one of these paragraphs. If this interests you, we wish he may write to us directly.

Rod Henderson

Roger A. McGraw

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(Other viewpoints on Pages 11 and 12.)

## Professional Practices

# Algorithmic Cobol Increases Efficiency, Reduces Error

By Richard S. Heiser  
Special to Computerworld

The Cobol programmer has been permitted to write time-saving routines such as various Fortran algorithms, but not for him, because "all Cobol jobs are different." This simply isn't true. The difference between the typical time-saving Fortran algorithms such as matrix inversions, etc., and Cobol algorithms is that the algorithm in Cobol is in the top level of the program rather than in the subroutines.

The Cobol top-level logic is a lot of repetitive file logic—the type of thing which RPG provides in a limited manner. If we can place this repetitive area into general-purpose subroutines, we will be able to increase the productivity of Cobol programming, and just as importantly, allow our managers to actually *read our programs*.

Currently, Cobol programs are too hard to understand, even with comments, explanations and flowcharts. Nobody can understand them, not even their authors.

That is why programs contain serious errors which often are undetected for months.

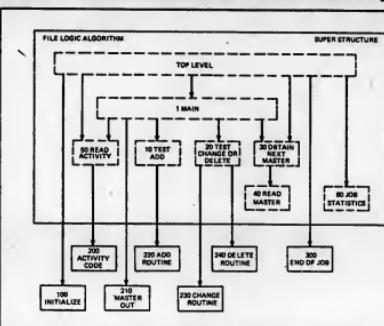
But, algorithmic Cobol programs could be read. Using algorithms, the programmer can make his programs readable, so that someone promises that it works, and that someone invites rebuttal. Algorithms, therefore, are worth reading.

### Example of Cobol Algorithm

Take, for example, the file logic algorithm shown in the figure. It is a general-purpose file update program, applying activity transactions from one file to a master file, and producing an updated master. The program assumes both input files are in sequence on a key which appears in every record, and that the individual records have unique keys. It examines the master file first, although it would be equally proper to examine the activity file first.

Functional features of this particular algorithm are:

- Out-of-sequence transactions will not be processed.



The figure shows the structure of the described Cobol file logic algorithm. The actual program tested has three File Control statements, 27 File Section statements, 11 Record Description statements, and 10 Workin

- Attempts to add records that already exist will be detected and reported.
- Attempts to change or delete records that do not exist will be detected and reported.
- Processing will continue after such defective transactions have been encountered.
- Record counts for all three files will be reported.
- Error counts will be reported.

Technical features of the algorithm include:

- The input and output areas normally reside in the same master file record.
- When a new record is to be added, the output record is cleared and set to the key of the new record. At the same time, a flag is set to indicate an unprocessed master is waiting in the input area.
- Records being added can optionally

be changed after being added (perhaps multiple times).

- Multiple transactions for a single key must appear in add/change/delete sequences.

### Using the Algorithm

The algorithm has been designed for convenient modification to specific application. Changes are grouped together and marked. The user should modify the File Section entries for his particular application, keeping the same names for files, records and keys, but changing the descriptions and record field to suit his needs.

All user-coded procedure statements are at the end of the program, in paragraphs numbered 100 or higher. The user routines should not do any master or activity file operations.

## Additional Work Necessary on CIA User Group Offer

The Computer Industry Association recently offered \$50,000 in seed money to start up a "no-strings" computer user group. This is a laudable aim, and one which the Taylor Report has supported for some time. Unfortunately, the way the current offer is formulated makes it impractical or unrealistic to expect the conditions to be met.

The basis of the CIA argument is that there are no such organizations in existence today, and that one is needed. I have no argument with that one.

But then the CIA goes on to say it will not put up any more seed money unless organizations are found, which are also prepared to put up \$50,000 on a "no-strings" basis. If there were such organizations in the field (in contrast to the Computer and Business Equipment Manufacturers, or the American Federation on Information Processing Societies would be possible organizations), then frankly they would already be the "no-strings" organizations which the CIA rightfully points out do not exist.

So, for practical purposes the CIA offer is being conditioned upon a denial of the asserted need for it.

There are some other conditions also, regarding acceptability of by-laws, mem-

bership of some large installations, etc., which have given rise to some industry comments that what the CIA wants is a user group for users of its members' products primarily.

And yet, if this is the availability of \$50,000 in seed money must be regarded as being potentially one of the great events of the year. So, here are some suggestions as to how the offer could be converted into a realistic one.

### No Special Interests

First of all, if the CIA really wants a "no-strings" operation, what is needed is not just computer users agreeing to a set of by-laws.

A lot of computer users, as can be noticed in various user groups, also have axes to grind. A Computer Users Association, for example, would be hard to run in such a way that some special interests of vendors, or other groups, than just computer users, would be served. To prevent such a group from taking control, the by-laws would have to be carefully worded so that the qualifications for membership would have to be for "independent" computer users, instead of just computer users.

A good way to start, then, would be to create a set of effective by-laws that preserve the independence of computer users, and keep the "special interests" involved. This could then be reviewed by the CIA attorneys, found to be acceptable or modified, and then published, so that computer users would be able to see from the outset what it was they were

interested in. If later they wanted to make changes, then the changes could be reviewed by both the CIA, as providers of seed money, and by the potential members.

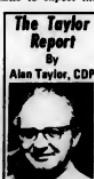
Secondarily, there needs to be some test to find out whether the CIA suggested

organization is really needed at this time. True, the CIA may think it is needed—and perhaps its existence will be very helpful from the point of view of the CIA—but that is not proof that it is really needed; nor is the fact that a few installa-

(Continued on Page 12)

## You Are You for an Independent User Group?

<p>(1) Are you for or against it? Why? _____</p> <p>(2) Do you know anyone who would give \$50,000 with no strings attached? Yes ( ) No ( )</p> <p>(3) Should the group wait for such support to be found? Yes ( ) No ( ) Why? _____</p> <p>(4) Would you be interested in joining such a group? Yes ( ) No ( ) Why? _____</p> <p>(5) What would you want from it and what would you expect to pay for it? Name _____ Title _____ Address _____</p>
---



**The Taylor Report**

By  
**Alan Taylor, CDP**

## Solving Social Problems by Computer—Part IV

# DPer Must Refuse Jobs Which Deny Essential Rights

The following is the concluding part of a series based on a speech given at the New York Academy of Sciences Oct. 9, 1973.

By Daniel D. McCracken  
Special to Computerworld

The potential implications of computer applications in the social sciences are manyfold, and there are certain considerations which should be made in the planning stages.

- Who benefits and who pays? We have seen altogether too many situations where the middle and upper classes benefit while the poor suffer. Is this again of those ways available to poor people in our cities, so that suburbs get to and from work a bit faster and with less necessity to have their sensibilities bruised by looking at slum housing. Does this apply to computing?

- We have known at least since Bacon

that knowledge is power. Does the new project you are planning place more power in the hands of people who already have most of it?

Take the case of computer analysis of prospective jurors. The client with lots of money and a big law firm can get a

important is quantifiable, or that just because somebody has attached a number to some trait it means anything. Recent studies have indicated, for one random example, that psychiatrists cannot reliably diagnose schizophrenia, which is merely the most common cause of admissions to mental hospitals.

If you are presented with a sheet of paper containing classifications of mental health and asked to do a regression analysis or something, pause to reflect that running meaningless data through a computer does nothing but turn out meaningless results.

- One of the toughest problems we face in an information-rich era is to find a good balance between the individual's right to privacy and the society's right to knowledge. If a good study of the correlation between two diseases would lead to better lives for thousands, does the individual have a valid right to refuse

give the needed data?

This is clearly a problem that has only proximate answers, which have to be worked out anew on every new application. We need at this time to be moving in both directions at once: asserting the individual's right to privacy while at the same time preparing more studies involving the use of computers.

- Finally, does your new project have an impact on the way people think about themselves? Does it tend to reduce them in their mind if not yours — to holes punched in cards? If so, are the potential gains worth it? Will your project contribute to the continued growth of the notion that except for credit card billing — computers are "oodproof" in short, is it dehumanizing?

Some social problems are simply not solvable by computer, and to try to do so is in fact worse than useless: it delays finding good solutions and worsens the problem rather than helping them.

I believe that a new era of humility is called for. We in the computer business need to be more aware of the serious consequences of our mistakes. We need to slow down. We need to take on about half as much work, but do it more than twice as well.

We need to do the unthinkable... tell the boss now and then that a given job ought not to be done, because if it cannot be done safely or in a way that protects peoples' essential human rights. Unthinkable, indeed. Almost never done.

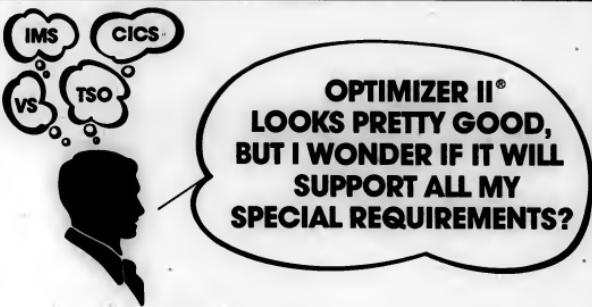
*Daniel D. McCracken is the author of a dozen textbooks on computer programming and an observer of the social problems associated with computer technology.*

## Viewpoint

rounds on each of possibly 200 prospective jurors, adding greatly to his time of getting a favorable jury, is this a good idea?

Many writers have observed that a society should be judged on how it treats its least fortunate members; does your new project work in that direction or in the exact opposite?

- When dealing with people and their problems, don't assume that everything



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## More Work Needed On CIA User Offer

(Continued on Page 11)

tions might be prepared to come forward and take leadership roles.

In the original CIA concept, \$150,000 was to be used to set up an organization of still unproven value. Instead I suggest a lesser amount would be needed to set up a test to see that the organization is needed, then it will be able to attract its operating funds after the seed money is provided.

As to how much money this is, I think that we could use the example of the CIA itself. It was set up by some energetic leadership that believed in the CIA concept and \$50,000. If such an organization, which did not exist, did not exist, is now able to offer \$150,000 seed money to a "no strings" operation, then it must clearly be a success.

Really then, what I am suggesting is that the CIA spend its \$50,000 to finance a good executive director ready to dash around the country, getting members and doing things. If at the time the money runs out, he has not been able to raise in grants or dues etc., enough to keep his organization going, then it should close down. I think this would achieve the CIA's aim.

This is where you, the reader, comes in, because you can give the CIA your opinion and the possibilities of your support for such a new organization.

To help you, here is a form which will allow both the CIA to have your opinion, and allow a later Taylor Report to tell everyone your reasons for supporting or opposing the concept of a "no strings" computer group.

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## Random Notes

### Interface Allows New Sorts To Handle 1400-Type Files

LYONS, Ill. — Installations working with 1401 compatibility mode on the 360 or with the 1401 emulator on the 370 can use IBM's current sorts on 1400 Series machines with the Sort interface from General Electric. The interface works with either IBM's 483 or 530 sorters, the company noted.

Separate versions of the interface support different user configurations. Version 1 is for 360s with 2311 or 2314 disk drives; version 2 is for 370s and 3330 disk units. The 1401/SORT sort interface adds 12K to the memory when the sort being used. The interface costs \$350 (version 1) or \$450 (version 2) and can be ordered from P.O. Box 79, 60534.

#### 'Sprint' Spooler Updated; Now Has Procedure Library

EL TORO, Calif. — A procedure library system is now available as part of release 6.2 of the Sprint utility package from Jason Data Services.

The procedure library supports allows users to maintain job control streams, programs and data sets on disk and to retrieve each with a single job control card. The new facility is available free to current Sprint users. The package itself costs \$50/mo., Jason said from 22511 Woodcrest Circle, 92630.

#### 'Easytrieve' Made More Flexible

OAK BROOK, Ill. — More flexibility in report formatting, support for mixed disk devices and improved accessing techniques in connection with IBM file are among the features added to version 4 of Easytrieve, according to the vendor, Pan-sophic Systems, Inc.

The retrieval package has additional accumulator fields. In the new version, sort support has been extended. When a sort command is used, Easytrieve first parses the number of records to be sorted.

Pan-sophic is at 1301 W. 22nd St., 60521.

#### PHI 'Payroll II' Goes on H6000s

TEWKSBURY, Mass. — The PHI Payroll II system has been ported and runs on even numbered models of the Honeywell 6000 series mainframes under the GCOS operating system, according to the PHI vendor, Wang Computer Services. When used on the 6040, 6060 or 6080 CPUs, it requires approximately 50K words of internal memory.

Written in ANSI Cobol for operation on large machines, PHI Payroll II is described by Wang as extremely comprehensive. It includes a personnel subsystem and a tax module for all federal and state taxes and certain local taxes as well.

Wang is at 836 North St., 01876.

# SOFTWARE & SERVICES

### Conference Study Groups Find

## MIS Planning Can't Replace Leadership

By Don Levitt  
Of the CW Staff

LOS ANGELES — There is a growing need for more formal long-range information systems planning, but general MIS planning cannot replace the political sensitivity, entrepreneurship, conceptual contribution and basic business leadership required of the successful MIS executive.

That near-paradox was among the conclusions of a working group at an invitational conference on MIS planning held recently by UCLA and McKinsey & Company, Inc., and chaired by Dr. John V. Soden, McKinsey and Dr. Ephraim R. McLean of UCLA.

Success in planning for information systems has been found, according to a survey reported by Soden, to depend heavily on the involvement of the MIS group in managing development projects and computer operations. The choice of importance was also a factor in the final success or failure of the project.

The work group found the need for formal long-range MIS planning is growing as the systems being considered become more complex, require longer to develop, involve multiple operational functions or departments and cost more.

The benefits that can accrue from long-range planning — improved short-term decision-making, enhanced communications between affected departments and a firmer commitment of resources — generally outweigh the costs of the undertaking, the conferees found.

Though the general need for planning is recognized, proven formal planning approaches range from the "controlled reaction" tactic of formally evaluating and ranking projects, to the strategic top-down scaling of the overall organization to locate high-leverage planning and control system application opportunities.

#### Delicate Balance

Another working group found the selection of a particular planning approach depends on the nature of the MIS function and the role of the MIS function in the organization, the degree of maturity in those areas and the sophistication of the executives in the general corporate structure and in the individual "user" departments.

Generally speaking, MIS executives most advanced in planning have become an integral part of the general management team of their organizations, the conference participants agreed. When that happens, they added, MIS strategies "have a much more impact on, and corresponding interrelation with, the long-range business plans of other functional executives."

That interrelationship is the key to the conclusion that all the attributes of basic business leadership finally are more important to the successful MIS executive than all the qualities of good planning, even though these may be among the tools used to reach that success.

### 'CUE' Enhancements Measure VS1 Usages

SUNNYVALE, Calif. — OS/VSI users can evaluate system performance directly rather than through interpretation of SMF Data with facilities recently added to the Configuration Utilization Evaluation (CUE) software monitor from Boole & Babbage.

The VS1-oriented modifications result in creation of two new utilization reports covering main storage, and real storage and page use.

The VS1 Real Storage Utilization Report provides management with an overview of storage memory characteristics, memory usage and paging activity statistics. It also reports the time partitions are deactivated by excessive paging activity, the percentage of time running as Virtual-Real, and the average time required to service a paging I/O request.

The VS1 Real Storage Page Utilization Report provides management with programmers and measurement analysts with detailed information. Paging activity and real storage usage are shown in terms of paging threshold parameters, real storage use in the fixed nucleus, pageable supervisor, partition space and available page queue.

The percentage of time paging I/O is in process is also shown, a Boole & Babbage spokesman added.

Working with CUE's data gathering techniques rather than those of IBM's SMF, the updated package probably avoids wasting the time and space otherwise devoted to data that is of little value to the VS environment, an observer noted.

The VS1 measurement facilities are included in the basic OS-oriented CUE package. Added changes to monitor VS2 operations appear to be in development and work is now being done on DOS/VS measurement at B&B, the firm indicated.

OS-based CUE, with or without the VS1 support, can be ordered for \$6,800 from B&B at 850 Stewart Drive, 94086.

## Nucleus Supports Integration Of Accounting Program Modules

MARINA DEL REY, Calif. — IBM 360/370 users can acquire a master control system (MCS) from International Management Systems Corp. (IMS) and use it as a nucleus for an integrated accounting system based on application modules from IMS, user-written programs or a combination of the two.

The MCS is a table-driven operation that edits, validates and formats transactions for each of application modules. It has the ability to explode a single entry into separate accounts for each application affected, including general ledger.

Although this nucleus can be integrated with the user's existing application programs, IMS has a library of modules that may be more efficient since they were designed specifically to work with the system. The report writer module is also available for users who want more retrieval flexibility than is provided in the prepackaged reports.

The IMS general ledger module is itself made up of several submodules so the user can shape the system more precisely to his needs. The system also currently includes fixed assets accounting, cost allocation, budget and "manufacturing," primarily for labor cost control.

The accounts payable module includes purchase order and check reconciliation from \$10,500 for accounts payable, up to \$15,000 for payroll. The report writer module is at \$250.

The system also vary in price from \$2,000 for check reconciliation to \$4,000 for fixed asset accounting.

IMS is at 4676 Admiralty Way, Suite 217, 90291.

## MMS General Ledger

There's hardly a controller around who won't be delighted at using the company's computer for handling the complicated job of General Ledger reporting.

On the other hand, developing a sophisticated corporate financial reporting system often is a difficult, tedious and expensive undertaking.

Do yourself a favor — get the MMS General Ledger. It's more than a software package. It offers unusual flexibility because of its unique data base design. And it can be used under DOS, IMS, or TOTAL. Best of all, the MMS General Ledger is reliable, accurate, and proven by more than 100 installations across the United States and overseas.

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## Independent Ties Cobol, Vsam

PHOENIX — Cobol programmers working in VS environments on 370 year can manipulate key-sequence Vsam data sets in native mode with the RVsam system from GSI Corp.

Although IBM has provided Vsam support for its Cobol compiler for some time, the mainframe hasn't yet to actually make the coding available, a GSI source said. RVsam provides the user a set of CALLS that permit full utilization of Vsam, without the restrictions and overheads required by the Iam interface — the usual route to Vsam until IBM provides the direct access.

The system uses intervals, updates — including modification of record length, insertion and deletion of records in sequential, skip sequential or direct access mode. RVsam also permits any mixture of sequential and direct accesses after the issuance of only one OPEN, GSI said.

The independent access method coding also allows the application program to skip forward or backward in the Vsam file on the basis of either a full key or just the generic or leading portion of the key.

In other words, GSI suggested, RVsam permits programs written in Cobol, or any language adhering to Cobol linkage conventions, to take full advantage of key-sequence data sets immediately. System designers can devote themselves to record reading logic as required by the application, not as dictated by the older access methods.

RVsam itself is written in the VS Assembler code available to both DOS/VIS and OS/VIS shops. It requires about 4K bytes when called into a user's program, and is available now for \$2,500. GSI can be reached through P.O. Box 16201, 85011.

## 'Datafilter' Eases Development Tests

MANCHESTER, England — Sharp reductions in the cost of producing and testing data validation programs on IBM 360/370 or Univac 9400 or 1100 series CPUs are possible with the Datafilter system, according to the developer, Hulme House Ltd.

Without requiring detailed coding, the system handles a wide variety of data types and complex levels of checking so almost all validation criteria can be covered by standard facilities. Suitable for any I/O medium, it will accept data in any format and code the firm said. In addition to validating individual fields, Datafilter also carries out cross-field checks and references to external files, and accumulates batch totaling and reconciliations. User routines can be written in Assembler, Cobol or PL/I and linked to almost any point of the validation routine.

The

package

contains

control and test modules, together with utilities for transferring punched paper and punched card files to mag tape or disk, and mag tape edit facilities.

The test modules allow data from user departments to be tried out early in program development. Weaknesses in the data structures or the collection system can thus be found — and hopefully corrected — before such basic revisions become difficult.

In operation, all I/O messages are put out on the line printer. Normal commands for other peripherals are interpreted and unexecuted, thus eliminating device handling from the testing stage.

Datafilter can be used under either OS or DOS/360-370 or the Univac operating systems. It is currently available in the UK and the firm indicated it will welcome inquiries from potential U.S. agents.

Hulme House is at 223 Corn Exchange, Hanging Ditch, Manchester M4 3BP.

## MRI Backs Interface Linking CICS, S2000

AUSTIN, Texas — MRI Systems Corp. has developed an interface that enables users of IBM's CICS teleprocessing monitor to link their CICS system to the MRI System 2000 data management system.

The interface provides access to System 2000 data bases through user-written message processing programs in conventional high-level languages or in System 2000 English-like natural language.

On-line users of System 2000 can share data bases concurrently with batch programs. The user language interface supplied by MRI supports teletypewriters and IBM 2740, 2741 and 3270 terminals. Terminals display paging, document editing and other features as required.

The interface is available from MRI for \$4,000 plus installation and maintenance.

System 2000 data management system itself costs \$22,000 and is currently operational on IBM, Univac and CDC equipment.

MRI's mailing address is P.O. Box 9968, 78766.

## Thinking about distributed computing? Lockheed System III gives you RPG II plus a price advantage.

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  - Terminals and their performance.
  - Multiplexing and data concentration.
  - Line-control software.
  - Network organization and design.
  - How to upgrade to a bigger system.

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# COMMUNICATIONS

## AT&T DI Costs Extra on Non-Bell Modems

**NEW YORK** — The new high performance data conditioning (DI) introduced by Bell for use with the 209 data set means an extra \$100 charge for users with non-carrier modems.

According to the tariff which took effect on May 25, "the user may pay a 'charge equal to the installation charge' for each service terminal ordered 'subsequent to the start of the basic service.' The installation charge is \$150 with a monthly rate of \$13.50."

The extra charge would be required as follows: If a user had a non-Bell data set and wanted to add DI conditioning, he would have to pay the standard \$150 installation fee in addition to the \$50 charge for each of the two service terminals. In effect, the total charge would be \$250, according to a Bell spokesman.

This contrasts with an installation fee of \$200 for each 209 plus \$150 for DI, for a user who installs a Bell 209 data set. Bell will not provide the 209 data set without the DI conditioning, so the total would be \$350.

In both cases, it is assumed the user

already has a Type 3002 voice-grade private line. Apparently, Bell will add a 209 together with DI without charging separately for the service terminals, but the addition of DI to a non-Bell data set will cost the user an extra \$100.

Type DI conditioning was originally

introduced for use with the 209 data set which operates at 9,600 bps/sec. It is a new type of conditioning which provides the following technical parameters on Type 3002 voice-grade point-to-point lines at the request of the customer:

Signal to C-Notched Noise Ratio - 28 dB

Non-Linear Distortion:

signal to second order distortion - 35 dB

signal to third order distortion - 46 dB

Type DI conditioning is not a substitute for existing C2 conditioning on Type 3002 private lines, a Bell spokesman said, and it is provided only for data transmission. It is not competitive with switched lines and a channel with DI conditioning may not be "suitable for voice transmission," Bell said.

## PABX Interface

## RCA Motel Mini Controls Terminals, Room Phones

By Ronald A. Frank

of the Staff

**PALM BEACH, Fla.** — RCA has installed its first electronic hotel/motel property management system to automate the operation of a motel and add minicomputer control to a room telephone PABX system.

Called Dataway, the system includes an RCA 400 series minicomputer with semiconductor memory that can have a storage capacity ranging from 16K to 24K bytes.

The system is interfaced with the PABX in motels ranging in size up to 500 rooms and automates such functions as check-in and check-out, room assignments from housekeeping and automatically dialed wake-up calls to guest rooms. All functions are performed under control of the minicomputer.

Provided on Turnkey Basis

The Dataway equipment includes CRT displays, journal printer, minicomputer

and the required interfacing to a PABX. It is provided to the user on a turnkey basis with all software and is designed to allow unskilled operators to use the system.

No on-site programming is required and all software is supplied on cassette storage, including data unique to the motel/hotel such as room numbers, types, etc.

Current information is maintained by the computer in room and housekeeping status, and, through the PABX interface, local call restrictions, automatic wake-up calls and other functions with rooms, via telephone.

Housekeeping status information can be entered by a maid when a room is ready for occupancy. By dialing a special access code on the room telephone, the room data base can be updated to add the availability of the guest quarters just cleaned.

In addition to a CRT terminal at the front desk, typical locations for CRT access would include the housekeeper, telephone switchboard and cashier.

## Lists Available Rooms

At check-in, the clerk can call up on the CRT a listing of available rooms. The room data is then added from the keyboard, including room number, length of stay and number of persons occupying the room. This data is then stored in the data base and the outside telephone system in the room is then automatically turned on.

At the switchboard, a CRT can be used to establish wake-up calls and messages can be entered into the terminals and initiated by the mini through automatic call equipment at the proper time.

A record is made of whether the guest answered the call, and in the event the call is unanswered, an automatic retry can be attempted. A hard copy of all wake-up call records can be printed out.

The CRTs include special data entry and confirm keys and allow operators to check all information entered from the keyboard. The journal printer provides a 21-column printout of vital "property transaction" for a permanent record to management.

The Dataway system can record charges for authorized local calls and can divert long distance calls to the proper telephone operator. When a guest checks out, phone charges are totaled and the phone is disconnected.

A typical Dataway system including mini cassette storage, dual CRTs and printer, together with required software to handle between 125 and 150 rooms, would cost about \$20,000 to \$25,000, a spokesman said.

The Dataway system is produced by RCA in 3900 RCA Blvd., Sunnyvale, Calif.

## Multimini Front End Expedites Stock Transactions

By Patrick Ward

Of the CW Staff

**CHICAGO** — Reliability is a key advantage of the "minimini" front end type of front-end processor, according to Patrick E. Ryan, vice-president of the Midwest Stock Exchange, Inc., who said his own installation achieves 99.8% uptime from this type of front end.

Ryan described his installation's front end system to a 384K IBM 360/30 at a recent data communications seminar here.

The stock exchange's front end, furnished as a bundled package by Computer Communications, Inc., includes five mini processors with 16K of their own core and 16K of mainframe core.

Four processors and their shared core form a square around the fifth mini CPU and its backup set of four memory units. A console operator can thus switch the central CPU to cover for any of the other four when a monitor prints out trouble signals, Ryan noted.

The advantage is that you have a failure, you can switch another piece of hardware, and therefore the amount of recovery effort is less, Ryan stated.

And a key reason for choosing this system over the IBM 2703 line controller was that if the 360 goes down, the front-end system can still provide interim service to customers.

The stock exchange has a second 384K 360/30 that can backup the other mainframe.

The stock exchange's system handles 250 terminals in brokers' offices, with 22

leased lines used in half-duplex mode carrying asynchronous transmission at 1,800 bps/sec to the front end.

Ordinarily this application system produces hard copy for the appropriate broker on the floor who then goes out and buys or sells according to the orders.

After taking the action, the broker on the floor fills in an "execution report."

This message is entered into the system and comes back to the front end. The 360 then takes the execution report and matches it with the order. At the end of the day the stock exchange prints reports to individual brokers, Ryan said.

## User Casebook

The front end's minis communicate in a counter-clockwise fashion to process data.

The cycle starts with CPU A, which handles the links and assemblies data into eight-bit couplers, and passes this along to CPU B, which assembles the couplers into messages or segments, whichever comes first.

It also does header and validation tasks, Ryan said, and it then writes messages onto a disk, and passes the disk address to CPU C.

C takes the disk addresses, reads the disk, and if the messages are to go to the disk, it passes them to it and swallows replies.

C then writes the 360's replies on disk and passes those addresses to D, which

reads the disk and passes data along to one coupler to A, which puts it back on the line.

A system of this kind requires a standard way for the minis to speak to one another, and the minis use their standard interface. "It's possible to program the mini which handles the lines without knowing or caring what the other application's portions in the other (mini) CPUs are doing," he mentioned.

And this makes it easier to obtain programs, Ryan noted.

The Midwest Stock Exchange's front end runs from 6 a.m. to 8 p.m. five days a week and handles one or two transactions per second, which are generally under 200 characters, Ryan said.

The stock exchange bought the 360/3000 system about two years ago from CCI. A three-month installation followed.

"One of our most serious errors was not writing a definitive specification of what we wanted," Ryan recalled. "Any time put in this is wasted effort," he advised.

The front-end system came to us "not fully documented," he said, to the installation's entire 14-member programming staff at one time or another was involved in documentation of certain modules.

The stock exchange has a hardware maintenance contract with CCI but does its own in-house software maintenance.

Computer Communications has been finally troubled and in Chapter 11, but is now out of it and is continuing to supply service, Ryan mentioned.

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# AT&T Restructuring Links Service to Account Type

By Ronald A. Frank

**NEW ORLEANS** — AT&T is restructuring its selling and service organizations in a move apparently aimed at giving increased attention to larger customers.

Three new groups of customer classifications will be established, according to F.A. McDermott Jr., director of sales development, who was part in an AT&T presentation at the recent International Communications Conference here.

The reason for the classifications was to match the qualifications of Bell System people to the customer's characteristics, McDermott said, and three types of accounts are being created:

The national account is the classification given to customers who are "truly national in scope with major locations served by several operating companies." These customers have centralized communications control, substantial billing and accounting systems.

The second classification includes selected and major accounts which require

that "the account representatives have specialized knowledge and/or training in order to be effective." This specialized knowledge may include operating characteristics of certain industry groups or it may include knowledge about the complexity of the user's communications needs.

These are typically large customers, major accounts that require the "attention of a full-time account representative and an assigned interdepartmental team." This type of customer is typically operating within the area served by one Bell company, McDermott said.

The balance of Bell customers will be classified as general business accounts, McDermott said, without further describing this category. He added that ICA members were not included in the first two classifications. Members of ICA must have a minimum phone bill of \$1 million/year to qualify for membership in the user group.

Speaking about user problems relating

to competition between Bell and the specialized carriers, W.H. Schindeler, AT&T assistant vice-president, said it was possible for the user to get caught between the telephone company on the one hand and the specialized carrier on the other when problems arise. Inevitably "one party waits for the other to act in clearing a case of trouble that each feels is

other's responsibility," Schindeler said.

In such cases the service is not working to the customer's satisfaction on an end-to-end basis, and no one is responsible for the complete service, he said. This contrasts with the relationship Bell companies have with independent phone companies to work together in a spirit of cooperation, he said.

## TI Adds RO Silent 700 Models

**HOUSTON** — The Digital Systems Division of Texas Instruments (TI) has added four receive-only models to its line of Silent 700 data terminals.

The models include two receive-only terminals, models 754 RO and 755 RO, which TI said feature a compact, space-saving design and two receive-only electronic printers, models 752 and 753, for outputting data.

Features available to users in these terminals include Ascii or Baudot/CITT codes and three different line inter-

faces — EIA RS 232C as a standard, or an optional RS 423A or RS 449 parallel interface. Other features include switch-selectable printing rates of 10, 15- or 30 char./sec and single- or double-line spacing. A paper out indicator is offered as an option for all four models, and the power supply is optional on the models 752 and 753.

Purchase prices for the models 754 RO and 755 RO, depending on line interface selected, range from \$1,450 to \$1,575 with lease rates from \$55- to \$100/mo including maintenance. Purchase prices for the models 752 and 753, without power supply, range from \$1,175 to \$1,300, with a price for the optional power supply at \$250.

In conjunction with the announcement of the receive-only units, the Model 720/730 series of terminals will go out of production effective December 31, 1974. These models, however, will be available after their dates of purchase or lease as used equipment on a "available" basis, and the company will continue full spares support.

In addition to the receive-only terminals, the company announced an integral acoustic coupler option for its ASR and KSR terminals and a binary data format option for the Model 733 ASR terminal. The solid-state acoustic coupler is mounted internally in ASR and KSR data terminals. Purchase price for the acoustic coupler is \$395 with a lease rate of \$22.50/mo.

The binary data format option provides use of an eighth bit for information instead of parity in recording data on cassettes. With this feature, the Model 733 ASR can now be used to store and load binary object programs in mini-computer applications. The binary data format option is available for purchase at \$250 and for lease at \$10/mo.

The company address is P.O. Box 1444, 2700.

## Standards for Packet Nets

### A Point of Contention

**CHICAGO** — The desirability of implementing standards for interconnecting packet-switched nets became a point of contention at a recent panel discussion here.

The issue was whether to settle for "minimum" standards now, or go to a standard while letting experiments continue until a more sophisticated standard appears.

Lack of any standards means "a higher cost to all concerned," said Dr. Ralph Alter, vice-president of Packet Communications, Inc.

"We believe we have an imperfect set of standards" than none at all, Alter contended. If standardization is delayed, the only important result is putting off the day when the user can benefit, he said.

But "it is really too early to build any standard at all," countered Vinton Cerf, professor of computer science at Stanford University. Once a standard is decided upon, it would inhibit further experimentation, Cerf said.

A third panelist, David Tutelman, supervisor of data networks control techniques at Bell Telephone Laboratories, said the prevailing viewpoint when he urged adoption of a rudimentary standard now:

By implementing a standard, we can learn about its weaknesses and then bring better standards later, Tutelman commented.

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The SR-22 weighs less than two pounds. Measures only 6 1/4 x 8 1/4 x 2 1/4 inches. From your desk it will operate on standard household current or 230V/50Hz common to Europe and South America. And if portable operation is required, you have the option of ordering a rechargeable Battery Pack.

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# SYSTEMS & PERIPHERALS

## Bits & Pieces

### Memorex Disk Controller String Switches 8 Drives

SANTA CLARA, Calif. — With the Memorex 3672 disk controller, users of IBM's 3320 and 3330-11-type Memorex replacement drives can string switch two strings of up to eight disk drives each between two CPUs.

The 3672 is used in conjunction with Memorex's recently announced 3673 disk controller for single-density 3670 and double-density 3675 disk drives.

The 3672 will come in front of two regular Memorex 3673 disk controllers or 3673 and an IBM Integrated File Adapter. The 3672 is priced at \$1,165/mo on a one-year lease from the firm at San Tomas at Central Expressway, 95052.

### Prime Uses 4K MOS Chips For 32K Memory Board

NATICK, Mass. — Using 4K semiconductor memory chips, Prime Computer, Inc. has packed 32K 16-bit words of memory on a 16 in. by 18 in. board for its series of minicomputers.

In addition, the firm has released a disk controller which can format floppy disks for the user's requirements.

The 32K boards will enable users to build computer systems with up to 256K words of main memory in a chassis 16 in. high. The 32K boards, when purchased as add-on memory for systems already installed, cost \$11,000.

The disk controller provides a maximum storage capacity of 3M bits. It has 77 tracks, a transfer rate of 250 kbit/sec, 10 msec track-to-track access time and a 10 msec head settle time. The diskette can be used with Prime's DOS and a dual diskette drive is priced at \$4,700.

Prime is at 17 Strathtmore Road, 01760. System/3 Ribbons Reinforced to Save 50% to 70% on Supply Costs

DOVER, N.H. — IBM System/3 users can have their IBM 5203 printer ribbons realigned, reconditioned and reinforced at \$6.25 apiece.

The service, available through Yankee Computer Supply, is said to save 50% to 70% in ribbon costs with an average of two reinkings on each ribbon. The firm is at 107 Silver St., 03820.

### Floppy Disks Loaded 20 at a Time

ANAHEIM, Calif. — Every five seconds the GSI model 150 Autoloader will pop a floppy disk into its IBM 3740-compatible diskette drive.

The unit automatically feeds up to 20 diskettes, reads and stacks them.

The 150 is priced at \$3,000 and interfaces for most minicomputers will be under \$1,000 extra from the firm at 1100-D S. Claudia Place, 92805.

## OCR Alphabetic Handprint Added to Scan-Data Unit

By Vic Farmer  
Of the CW Staff

NORRISTOWN, Pa. — Users looking for a reliable and inexpensive alphabetic handprint OCR reader can obtain Scan-Data's alphabetic option for its Model 2250 OCR reader. The character set includes 26 upper-case alphabetic characters and six symbols: plus, minus, asterisk, slash greater than and less than.

The alphabetic set can be used in conjunction with a numeric handprint character set, but a complete alphanumeric set can be obtained by keeping the individual fields either all alphabetic or all numeric for the best results. Mixed fields will have a much higher error rate and may even need 100% key verification, the spokesman said.

The 2250 does allow specification of field, and a street address application, for example, could consist of numeric field followed by an alphabetic field.

The Scan-Data handprint option can be field-upgraded through the replacement of the scanning circuitry.

The new recognition unit uses nine overlapping fields to scan the entire character set. Each area is examined for the presence or absence of 256 features specifically designed for the alphabetic handprint character set.

This coding scheme allows over 256 possible combinations of codes to define characters and their variations.

### Renalization Possible

These feature codes, along with character height, width and data type information, identify the character being scanned, according to the firm. Individual characters can be redefined as many times as the software specifies at 21 different shades of gray intensity.

### OCR Scanner Handles Up to 3,000 Sheet/Hr

NEWTOWN, Pa. — A \$1,000/mo optical scanner from Optical Scanning Corp. handles documents ranging in size from 2 in. by 2-1/2 in. to 8-1/2 in. by 11 in. at a maximum rate of 3,000 sheet/hr.

No software is required to change the format from one form to another as the scanner is controlled directly by the program sheets.

The system, called the Opscan 27, reads numeric OCR-A, numeric handprint and pencil marks. The system may be used in a free-standing configuration providing records on magnetic tape or it can be mounted in a cabinet.

Output devices include mag tape, cassette printers, card punches and telecommunications adapters.

The company can be reached through P.O. Box 40, 18940.

levels.

The terminals provide facilities for validation, correction and reject handling of scanned data.

The handprint option costs \$1,950/mo on a 24-hour, 7-day-a-week basis. The 2250/1 system will cost \$7,000 to \$9,000. The error rates are limited to reading alpha and numeric handprint, upper and lower OCR-A, and OCR-B.

### First User

The first customer for the alphabetic handprint feature is Migras, a cooperative of retail stores and food processors in the New York City area. Delivery is slated for the end of the year with first deliveries starting in the first quarter of 1975.

The equipment will read the recommended shapes for alphabetic handprinting being reviewed by the American National Standards Institute and will be modified to fit the standard when [and if] it is finalized, according to the firm.

## Double-Density 3330 Vendors Active — Ampex Enters Market

REDWOOD CITY, Calif. — Ampex has joined the ranks of independent disk drive suppliers offering IBM 3330-type 200M byte/spindle disk drives.

The Ampex 3D-3330 has an average access time of 10 msec, a system that the IBM 3330-11 and occupies 50% less floor space, according to the firm.

Priced at \$20,000 each for the single-spindle drive, the firm has not yet announced a controller price.

The firm is currently modifying its 3D-3330 compatible DC830 controller and setting up a new microprogram for the floppy disk program loader in the DC830 that will allow intermixing of 100M- and 200M byte/spindle drives.

The DC830 controller presently is priced at \$1,000/mo. Deliveries are slated for the fourth quarter of this year from

## HP Mini System Dedicated to Basic

CUPERTINO, Calif. — Hewlett-Packard has packaged an HP 3000 mini system with new software to come up with a Basic-oriented time-sharing system.

The HP 3000/Model 100 accommodates up to 16 terminals each with access to all peripherals. Through Basic commands users can call up programs or subroutines in the system. The system has been developed in Fortran, Cobol or SPL. These subroutines, depending on how often they are used, can speed up run times from 10 to 100 times, according to HP.

The system uses identical file systems both for data and programs so all files can be made available to any user in any operating mode, HP said.

Price of the Model 100 is \$129,500 with delivery beginning in July. Optimized for Basic, the system is less costly than other 3000 systems, HP noted. Terminals are additional, but the card reader and line printer are included. HP is at 11000 Wolfe Road.

the firm at 401 Broadway, 94063.

### Calcomp Prices Out

Meanwhile, Calcomp has released prices on its previously announced IBM-compatible 3320-11-type disk drives. The price for the Calcomp 1035 controller is \$45,000 and one double-density, two-spindle drive is \$45,000. Monthly rental is \$1,650 for a controller, \$700 for the two-spindle drive on a one-year lease.

Among the features offered by the Calcomp system are dual controllers which allow two independent data paths from two controllers to a shared string of up to 16 spindles; two-channel and four-channel switching; and format write release.

Calcomp is at 2411 W. La Palma Ave., Anaheim, Calif. 92801.

## DEC Minis Get Line Printers

MAYNARD, Mass. — Digital Equipment Corp. (DEC) has announced a "new generation" of 123-column, 300-line/min printers for PDP-8, PDP-11 and PDP-15 minicomputers. The two new printers, models V and W, are priced up to 43% less than equivalent older models in the DEC line.

### Deliveries in July

The Model V, with a 64-character set, is priced at \$9,900 or 43% less than its predecessor. The 96-character Model W,

which prints upper and lower case, sells for \$11,200 or 37% below the cost of its prior counterpart. Deliveries are scheduled to begin in July.

Both printers, manufactured for DEC by Data Products Corp., produce multiple copies with up to six parts and feature an 11-position manual switch to provide top or bottom positioning for four lines in a 14 in. long, three-sectionally rotating character drum. The printers are switch-selectable for either 6- or 8-line/in. and have a hardwired self-test capability.

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## CIS Channel Interface Connects Peripherals to IBM 360s/370s

LOGAN, Utah — Two 15-1/2 in. by 15-1/2 in. circuit boards provide interface electronics required to directly connect peripherals, terminals and data entry products to IBM 360 and 370 I/O channels.

The products, from Computer Information Systems (CIS), use a nonprogrammable control unit interface called Ibmint to support up to 256 IBM channel addresses at a maximum transfer rate of 1 Mbyte/sec. The units can be connected to the selector, multiplexer or block multiplexer channel of the 360/370.

An additional interface, Mibmint, allows the connection of a minicomputer to provide programmable capabilities for tasks such as multiplexing, front-end

### 40-Column Printer Offered

SAUGUS, Calif. — The PR1004 40-column printer from Elec-trol, Inc. prints 20 lines/sec for a total throughput of 80 char/sec.

The unit is priced at \$395 for single units; \$216 in quantities of 1,000. The firm is at 26477 N. Golden Valley Road, 91350.

processing, formatting, editing, code conversion and message switching. The units allow emulation of IBM peripherals providing both hardware and software compatibility, CIS said.

Optional features available with the interface units include automatic power sequencing, alternate channel control, automatic command rejection/acceptance and a control and display panel. Ibmint is priced at \$4,400 and Mibmint costs \$4,900. Delivery is 60 days from the firm at 2084 N. 1200 East, 84321.



**Card Reader in Control**

Ninety-six-column cards have been used for price tags, to free up drawer space and to save paper. Now Decision Data, Horsham, Pa., has installed its Model 9625 card reader to program and control a backplane wire wrapper.

The card reader provides the flexibility for making modifications and additions by removing individual cards representing each wire, and inserting the original routing information. New cards can be placed in the deck for additional instructions.

### Microprocessor-Type Microdata 800/1600 Has 1K ROM, 1K RAM

IRVINE, Calif. — The microprogrammable Micro-One from Microdata Corp. is a microprocessor version of the Microdata 800/1600 series of computers.

Interface hardware is available to provide plug-to-plug compatibility with other Microdata computers and peripherals; the Micro-One can be microprogrammed to emulate other generic or specialized-purpose computers, according to the firm.

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Ask your Sycom representative about our intelligent terminal and its new Flexible Disk option.

The speed reader.



**SYCOR**

### Calcomp Drives Use Five-High Disk Pack

ANAHEIM, Calif. — The Trident series of disk pack drives from Calcomp uses a five-high disk pack (three standard 3336-type disks plus two cover disks) mounted on a 3330-type spindle to give 25-, 50- and 80-Mbyte capacities. Five surfaces are for data and a sixth surface is for servo control.

The series uses 370 track/in. technology with up to 815 cylinders and a 806 kbyte/sec data transfer rate.

Each drive includes an air flow system, power supply, control and data electronics, and a variable frequency oscillator to synchronize the read/write timing to the pack. The unit provides a digital interface.

The T25 25-Mbyte drive is priced at \$4,430; and the T50, \$5,210; and the T80, \$6,130. The units are available from the firm at 2411 W. LaPalma Ave., 92801.

### Pertec Floppy Disk Drive Offers Retractable Head

CHATHAM, Calif. — Pertec's FD4000 floppy disk drive is designed with data written on IBM 3540 or 3740 systems. It has a retractable head to increase head and media life.

When under program control, the head is unloaded from the diskette and physically removed from the media.

The unit is priced at \$650 without controller from the firm at 9600 Ironlode Ave., 91311.

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\*Patents applied for

## 'Open Door to Enhanced Benefits'

# Transportation System Standards Urged

By Edie Holmes  
Of the CW Staff

WASHINGTON, D.C. — "Adopting and implementing certain standards, even within a single transportation mode, can open a door to enhanced computer benefits," James M. Henson, vice-president of IBM, said recently at a national forum on "Interfacing transportation data systems."

Henson urged the sponsors of the meeting, members of the Transportation Data Group (TDCC), to continue TDCC's work to complete work on standardization codes in order to open the way for development of more computer applications for the transportation industry.

The banking industry is one field which has standardized codes and enjoys increasing savings resulting from a wider variety of computer applications, he noted. "That industry would have chosen today — rather than free-flowing data systems — if industry representatives had not arrived at a standard coding system, made it official in form and physical characteristics and realistically enforced and encouraged its use," Henson said.

"Of course, the computer industry could not have provided the specialized banking equipment and software without those standards," he added.

No industry uses computers more extensively than transportation, in Henson's view. But he contended that, "as an industry, we will be in concert to achieve surely needed data exchange standards, we have miles to go."

The "stop-action" picture provided by machines that can reduce the time between what's happening, and the analysis of that happening, make computers essential to transportation that doesn't stop moving, he suggested.

Henson noted the overwhelming development of computer applications in the area of operations, citing examples of savings for a motor carrier, a rail line, an air traffic control system, a major steamship line and more.

But while "in-house" computers speak eloquently to one another because companies have standardized all key data elements within their individual companies, their attempts to communicate across company lines produce only incomprehension, Henson said.

Progress toward increased communication between companies within an industry

## Continuous Power Assured To Strategic Computers

HANSCOM FIELD, Mass. — Equipment to assure a continuous flow of electricity to a select bank of Strategic Air Command (SAC) computers, despite possible commercial power failures, has been installed at Offutt Air Force Base, Neb.

The equipment was installed as part of a \$10 million program to overhaul and modernize portions of SAC's Automated Computer Center, said Major F. A. Anderson, the U.S. Air Force Electronic Systems Division's Deputy for Command and Management Systems. "This causes the computer systems to fail, requiring extensive efforts and valuable time to reload them and bring them back to their original operating levels."

"Such a delay can be disastrous," Anderson added, "in an age when nuclear battles can be fought in minutes."

The new equipment was built and installed by Avtel Corp. of Covina, Calif.

SAC uses this computer system to receive, store, process and display status information on SAC's deterrent forces on a worldwide basis.

try and between different industries depends on the standardization of codes along the lines proposed by the TDCC, he reiterated.

TDCC appears to have made some strides in establishing coding standards, Saks said. Six standardization symbols have been either accepted or are in some phase of acceptance by industry, he noted.

For example, automatic car identification labels have been accepted by the railroad industry, a standard maintenance status code committee has been adopted by American Trucking Associations and a shipping status reporting standard should become an effective method of data exchange between motor carriers.

Intramodal systems, such as those used by the banking industry, are like stepping stones to the higher and safer ground of intermodal systems, based on systems and standards established between industries, Henson commented. He noted the strides

made in intermodal standardization by the grocery industry with its various suppliers and services.

The transportation industry as a whole should be able to achieve this kind of communications, Henson said, but only if we put aside diverse corporate procedures and opinions and work toward agreeing on and implementing standards under the TDCC umbrella.

"Imagine the impact on the world's freight hauling system, if, at the time a shipper prepared a commodity for shipment, he could affix a label on that commodity that related commodity code, destination code, carriers code, patron code, tariff code and routing code. Virtually no other piece of paper would be needed except in summary form."

"Tariffs could be retrieved and calculated automatically. Shipper, carrier or consignee could trace the movement of freight at each stage," Henson said.



# Whatever happened to the checkless society?

To paraphrase Mark Twain, those reports on the imminent demise of cash and checks are greatly exaggerated. And that's one of the subjects you'll find in our June 26th Supplement, **Computers in Banking and Finance**.

Edited by Don Levitt, this *Computerworld* special report will cover several important topics, including:

- Banking and the consumer.
- The electronic funds transfer system - where it is and where it might be going.
- Banks and minicomputers.
- The acceptance and future of OCR.
- MIS - is it here now?

If you're involved in this field, our June 26th Supplement will be very interesting reading - and if you're marketing to this industry, your ad should be there. Supplement close is June 7th.

For more information, just contact your nearest *Computerworld* salesman. Or call Judy Milford at (617) 965-5800.

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# If you think all premium take a closer look at

Because all premium computer tapes are 100% certified and meet industry standards, you might think they're all equal. They aren't. The important difference is the margin by which a manufacturer's standards exceed industry standards. It's this extra margin that allows no margin for errors. Let's look at a few superior points of BASF 2000/A.D. computer tape:

## Debris-free edges

Rough edges and debris on tapes are the result of inferior slitting, which causes the coating to overhang the base. The projecting edges become detached by tape guides and drive rollers. The result: loss of head-to-tape contact...and errors. BASF has eliminated these problems with an exclusive double-cut slitting technique that keeps our tape edges perfectly debris-free.



BRAND A



BRAND B



BRAND C



BASF

## Straight edges

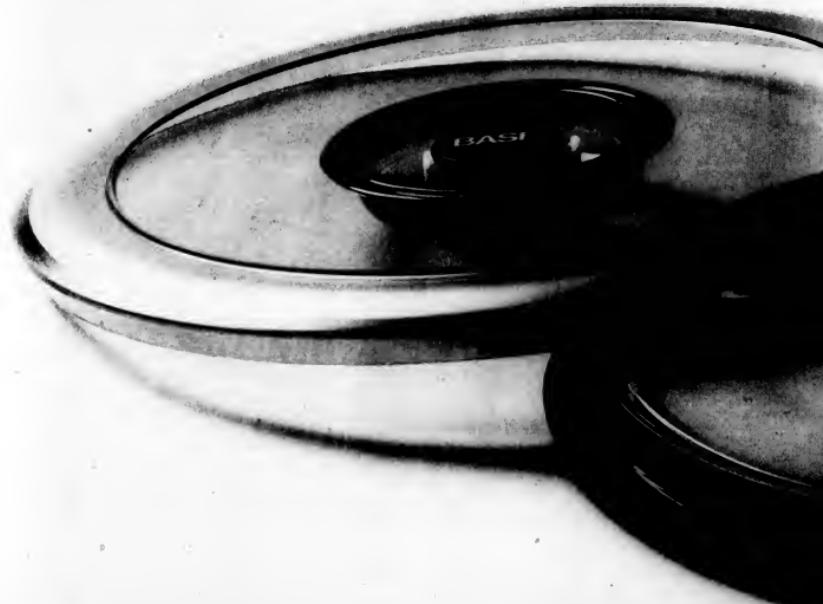
Another hassle, even with premium tapes, is the wavy edges. Intermittent reading and writing errors. Double-cut slitting techniques occasionally compensate for the waviness, but our double-cut slitting technique keeps 2000/A.D. edges perfectly symmetrical.

## Uniform width

Uniform tape width is essential. According to industry standards, a width of our 2000/A.D. standard at  $\pm .001"$ . It's a must for reliable data storage and a.m. debugging sessions.

## Superior coating

We've developed a new "hotter" coating that produces an output consistently higher than other tapes.



You're already paying for BASF

# Computer tapes are alike, but BASF 2000/A.D.

um tapes, is edge waviness. This causes dynamic conditions during tape transport can so it's a tough job to track down. Again, 000/A.D. edges absolutely straight and

in order to avoid dynamic skew errors. tolerance of  $\pm .002"$  is acceptable. We peg small detail, but it could eliminate a few 3.00

"oxide" coating . . . a higher energy oxide than that of the National Bureau of Standards

reference tape. Then we apply this oxide with a unique coating technique that provides a more even dispersion of oxide particles in the binder. For any bit density, including 6250 B.P.I., 2000/A.D. gives you more reliable writing and reading . . . better bit-to-bit uniformity . . . fewer drop-ins and drop-outs. And virtually no permanent errors.

#### Hard surface

Head wear is inevitable, but it shouldn't be excessive. That's why we developed a finishing operation that gives 2000/A.D. a harder, smoother surface than anyone else's. It's a lot kinder to your tape head, and keeps your maintenance time to a minimum.

#### And in conclusion

2000/A.D. costs no more than other premium tapes. You're already paying for BASF quality . . . you might as well have it. For the whole story of how 2000/A.D. stacks up against the competition, write to BASF Systems, Crosby Drive, Bedford, Mass. 01730.



quality...you might as well have it.

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## Housewives' 'Underground' DP Service Breaks Down Recipe's Nutrition Count

By Nancy French

OF THE CW STAFF  
CAMBRIDGE, Mass. — Two women who manage the household bills by running their own home-based computer service company now are offering computerized nutritive analyses of foods prepared from recipes.

For a small fee, Consulitus will analyze the ingredients in each recipe, print out a breakdown of: calories, protein, carbohydrates, fats, sodium, Vitamin A, Vitamin C, Thiamin, Riboflavin, Niacin, calcium, iron and cholesterol.

The women now have put out three years of contract programming which Karen Brothers and Louise Silver have been doing for local clients in the area of statistical analysis, general ledger accounting, data reduction and word processing. They do their work at home on a PDP-8 minicomputer installed in Brothers' basement, away from the children and pets at play elsewhere in the house.

When appropriate, they buy time on larger time-sharing systems outside the Brothers' home.

#### A Practical Amalgam

Silver explained that the two often talked about putting their talents together had been separate tasks. "We began doing recipe analysis for our own personal use," she said.

Working from metric tables supplied by the U.S. Government, the women found they first had to convert the standard volume measurements — cups and teaspoons, for example, found in normal recipes — into densities, and then from densities into grams to be compared with nutritional tables prepared in milliliters.

"With the bulk of the needed ingredients now in core storage, we merely type in the amounts called for, with any additional ingredients not used frequently enough for permanent storage, and the machine does the rest."

This type of information is especially useful to someone like my father who is a heart patient and overweight," Brothers said.

It's fairly easy to find low-salt diets or low-carbohydrate, but it's difficult to find a diet that's low-salt, low-cholesterol, low-calorie and also low in saturated fats," Brothers said.

Through analysis of recipes someone with a particular dietary requirement can be certain



CW Photo by N. French

A typical workday finds Louise Silver and Karen Brothers in base camp — "our office center" — entering numbers from nutrition tables into the PDP-8's memory.

Silver said:

"Without the computer it would take about three hours to analyze one recipe," Brothers remarked. "A typical recipe now requires from 10 to 15 minutes," she said.

#### Tricky Details

This type of information may be important to the person trying to determine how much protein a particular non-dairy creamer or to the weight watcher who wants to know the calorie count.

It would also help the person on a low-salt diet by providing sodium content, plus presenting a good idea of the nutrition versus dollar value of the foods being used.

"This type of information is especially useful to someone like my father who is a heart patient and overweight," Brothers said.

It's fairly easy to find low-salt diets or low-carbohydrate, but it's difficult to find a diet that's low-salt, low-cholesterol, low-calorie and also low in saturated fats," Brothers said.

Through analysis of recipes someone with a particular dietary requirement can be certain

of eating safe limits of "dangerous" foods.

#### Working Within Limits

Recipe analysis is a good job for the PDP-8 with 4K storage capacity, according to Silver. "In general we are more geared to jobs with lots of numbers to be shoved around as opposed to payroll, for example, where a great deal of storage is required," Silver explained.

One successful payroll application involved a small company with many freelance employees.

"There is no withholding involved, but employees are paid at many different rates, depending upon each particular type of work. To compute these manually would be a mess," Silver said.

Both graduates of MIT, the women formed the company as a solution to the career versus family dilemma, allowing them to work from home as computer programmers while maintaining the flexibility they need to care for small children.

Silver's background is principally in systems programming and Brothers' is in scientific applications and statistical analysis.

## slow poke



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## Terminal-in-a-Suitcase Helps Fight Oil Spills

TORONTO, Ont. — When major oil or chemical spill occurs in this province, a portable computer terminal is one of the first pieces of emergency equipment at the scene.

The terminal-in-a-suitcase gives quick access to a computer in Toronto which, when fully programmed, will transmit information on where to find the nearest private or government equipment to fight the spill, according to Nick Vanderkooy of the Federal Environment Ministry.

### Finds Nearest Equipment

The interactive system guides the user in entering the spill location and the equipment needed, and then the terminal starts printing out information on where the nearest equipment

is and day and night phone numbers.

There is a manually prepared book with the same but updated kind of information, Vanderkooy noted.

"It took a year to put together the data in the book. In that time equipment changes," he explained.

### Cooperation Needed

Now equipment owners can keep the equipment list up to date in the computer's memory if they connect.

The portable terminal can also reach a U.S. Environmental Protection Agency computer in Washington, D.C. That system provides data on each of 1,000 chemicals that might spill — how to identify them, how toxic they are and how to treat them.

## It Keeps Recordkeeper's Books

IRVINE, Calif. — Until recently, Sterling Publishing Co., Inc., the keeper of most of the world's records, had a recordkeeping problem of its own.

Publishing more than 700 reference titles in print, and must maintain complicated royalty records as well as the more usual control over sales and inventories.

Records management can be a problem in publishing companies, particularly those with sales under \$15 million a year, according to Lincoln A. Boehm, director of marketing for Sterling.

A Basic/Four Model 400 system permits Sterling to write over 130 12-line invoices per day to a roster of 6,000 customers. It prepares invoices and performs pre-billing, two-step order entry, inventory control, accounts receivable, sales analysis and finally, the complicated and time-consuming authors' royalty accounting.

The Basic/Four Model 400 consists of a central processing unit, a tape drive and two video display terminals.

As a result, one operator can do billing that previously took two billing machines, accounting functions previously done by a service bureau and royalties previously done by hand, Boehm said.

Sterling now has "perpetual inventory, quicker billing, better control over orders from receipt and shipment and fewer out-of-stock books," Boehm declared.

## Two Publications Discuss Security

SPRINGFIELD, Va. — Two publications now available from the National Technical Information Service (NTIS) here offer both an overview and bibliography on computer security.

*On Computational Security*, by Fred E. Scherf, Document No. AD-775 451/BW-N, NTIS, P.O. Box 1553, 22151, 102 pages, \$4.50.

This book deals with the spectrum of protection for computer facilities and resources against unauthorized access and uses, as well as from loss due to uncontrollable events. Methods investigated by which cryptographic techniques can be used to encode sensitive data.

*Computer and Data Security: A Comprehensive Annotated Bibliography*, by John Arthur Scherf, Document No. AD-775 546/5WC, 308 pages, \$7.25.

This bibliography contains 110 annotated entries. Half of these entries are extensively annotated, another quarter superficially annotated, and the balance unannotated. All extensively annotated entries are rated as to their current usefulness and uniqueness, and a subject index of 160 items can be used for referencing purposes.

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Ufa,

# Conflict of Interest Charge Costs City DPer \$10,000

By Patrick Ward  
Of the CW Staff

**DENVER** — A conflict of interest charge has cost Joseph M. Lewis, the city's DP administrator, five months off the job and over \$10,000 in lost pay. While Lewis has gotten his job back, it is not certain he will ever see the \$10,000 again.

The problem began when a local newspaper suggested Lewis had violated a city ordinance by going on speaking trips for Comsat Data Systems, from which the city annually leases over \$150,000 worth of disk drives, add-on core and terminal equipment.

Denver's city charter forbids a city official from accepting money or other benefits from outside sources that might lead to a conflict of interest on the job.

After a hearing before the ethics board, Lewis was dismissed from his job. But a series of appeals followed and a career service board found that CDC paid Lewis for legitimate services rendered. The board said there was no evidence he tried to get preferential treatment for CDC or that CDC paid him to obtain it.

The board rejected the appeal, but decided Lewis should not be paid for the five months between his dismissal and his reinstatement for being absent without permission.

Lewis and his lawyer have not decided whether he should appeal for his lost pay.

#### Four CDC Seminars

Lewis said he took part in four CDC seminars in various locations between 1970 and 1973. In three of those, he said, he received a \$100/day stipend beyond expenses.

The seminars were with CDC personnel, Lewis stated, and "we were discussing performance of their equipment, possible improvements to systems and things like that."

There was a total of about five days spent on the trips over four years, Lewis stated.

According to Richard A. Clark, city finance director and Lewis' direct supervisor, Lewis had "no authority" to request to inform his direct superior in writing about the trips.

The city requires that a nonselected official report in writing to his appointing authority any outside work before accepting it, and also that he tell the appointing authority if he feels he might be involved in a conflict of interest.

Violation of the rule can be grounds for discipline.

"Nobody ever told me they had to be in writing," Lewis recalled. Instead, Lewis said he mentioned his planned trip to Elmer Johnson, his superior at the time. But after the newspaper story came out, Johnson claimed he did not remember if Lewis had told him about the trips, Lewis noted.

#### Board Appearance

After the newspaper story appeared, Clark asked him for a list of trips and then asked Lewis and David Smith, DP accounting systems manager who had accompanied Lewis on at least one trip, to appear before the municipal ethics board.

The board found that Lewis' trips for CDC put him in a conflict of interest situation, but it was up to Clark to set the penalty, and he did so by firing Lewis from his \$2,170/mo job on Sept. 14. Smith was given a 30-day suspension without pay.

However, Lewis appealed for a career service board hearing, and the board recommended that Lewis be reinstated to the next step, the career service board.

The board found that Lewis did not charge his absences against vacation leave, at least for most of the trips, and that

## Traveling Officials Closely Watched

**NASHVILLE, Tenn.** — Municipal DP chiefs who do a lot of traveling to conferences or user group meetings may find their local press tagging closely behind.

That happened to John Sorace, Nashville's information chief and past president of the Univac Law Enforcement User's Group.

In a story entitled "Sorace Promotes Univac in Travel," a local newspaper noted the assistant police chief "has taken numerous trips to cities around the country" with costs shared between the city and Univac, "to share his experience and to promote Univac equipment."

In the story, Sorace was quoted as saying he had expected a call from a newspaper reporter, since he felt "widespread rumors" about the trips had distorted the facts about his relationship with the Univac user's organization.

According to the newspaper, Sorace made trips to several of the cities "involved telling potential clients of the virtues of Univac equipment," but the primary purpose was to share knowledge among fellow Univac users.

Promotion of Univac products what stopped at telling potential users what

the Nashville police were doing with their equipment, Sorace noted in the newspaper story.

In a subsequent interview, Sorace told Computerworld he had not done any promotion work for Univac on the trips, and their entire purpose was to work out common problems and design mutually usable systems with other Univac users.

The user's group had met quarterly at user sites, with the member municipalities paying the expenses, Sorace said.

At one time the group was meeting two monthly and Univac did pay for the two extra meetings per quarter, he mentioned, but these payments did not include a stipend for group members.

For over a year now, the group has been back to quarterly meetings, at user sites, Sorace emphasized. The only exception to this is when the law enforcement group meets at the same site as the Univac Users' Association, so the smaller group's members can combine the meeting, Sorace noted.

In Sorace's case, no municipal board of ethics or legal action followed the original newspaper story.

There wasn't evidence to show he had either oral or written permission to go.

But the board decided to reverse the conflict charge and the dismissal as of Feb. 13. Lewis' superiors had a 30-day period to accept the career board ruling or take the case to court. On March 14, Lewis was back on his job.

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New York	Mar. 18—20
<b>BREAK WEEK</b>	Mar. 23—29
Cleveland	Mar. 31—Apr. 2
Chicago	Apr. 8—10
Minneapolis/St. Paul	Apr. 15—17
<b>BREAK WEEK</b>	Apr. 20—26
Seattle	Apr. 29—May 1
San Francisco	May 6—8

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# COMPUTER INDUSTRY

## CI Notes

### GSA Contract Names STC

LOUISVILLE, Colo. — Storage Technology Corp. has been awarded a contract by the General Services Administration making STC the mandatory source of supply for all 3420-type tape subsystems for all agencies of the Federal Government.

Revenue from the five-year contract is expected to be at least \$2.5 million and could potentially exceed \$25 million on an "if sold" basis, the firm said. The contract provides for renewals to 1979.

#### IBM Awarded Data Channel Patent

POUGHKEEPSIE, N.Y. — IBM has received a patent for the data synchronizer used in the 360 and 370.

The data synchronizer, also known as a data channel, permits the computer to process more than one job at the same time without actually interrupting a job in process.

The patent was issued to the three IBM co-inventors: Carl L. Christensen, Lawrence E. Kanter and George R. Monroe.

#### GTE Enter POS Arena

STAMFORD, Conn. — General Telephone & Electronics Corp. has established a new subsidiary, GTE Comp-Acc, Inc., to provide computerized point-of-sale cash register systems for the food service industry.

The nucleus of the new subsidiary will be the patents, software and other technical knowledge and certain of the assets which were recently acquired from Comp-Acc, Inc., of Cincinnati, Ohio.

#### Supershorts

IBM has dropped its plan to build a management training center in Ridgefield, Conn., due to community objection to landing helicopters on the site. An alternate site for the center has not yet been chosen, according to the company.

Sycon, Inc. has sold Logabax, S.A., France, a license to manufacture and distribute its dual flexible disk drive in Europe. The division, The unit is expected to be in full production in Paris by the first quarter of 1975.

Control Data Corp. has acquired all of the outstanding common stock of Davidsohn Computer Services, Inc., a New York firm specializing in the design and development of software applications programs for brokerage firms.

NCR Corp. has reached its target of installing at least 5,000 Century computers with the order of its 5,000th machine by the City of Newport Beach, Calif.

### Renegotiate Contract, Limit Funds

## Proposals Would Cut Teale Pact Scope

By Molly Upton  
Of the CW Staff

SACRAMENTO, Calif. — California's \$19.9 million Teale pact to limit the consolidated Stephen P. Testa data center and program conversion is coming under increasing scrutiny by state officials.

Two recommendations to reduce and renegotiate the value of the contract were presented to the Assembly Ways and Means Committee last week.

Now that IBM now says it will program convert for the Department of Motor Vehicles (DMV) on Aug. 4 rather than the established deadline of July 1, and some skepticism that the Aug. 4 deadline will be met, have raised several questions about the raison d'etre of the consolidation. The question is whether the selection of IBM as prime contractor.

Harvey M. Rose, state auditor general, recommended that further funding of the IBM contract beyond the 1973-74 level should be discontinued and the contract

renegotiated to require "added performance by IBM for the monies already appropriated in fiscal years 1973-74 in exchange for IBM's failure to perform in timely manner," said Auditor General Thomas, chairman of the Joint Legislative Audit Committee.

Rose's recommendations included renegotiating the contract, reducing IBM hardware from two 370/165s to one, updating Univac equipment on a year's basis, the month after the conversion credits for another Univac computer and dropping the Department of Water Resources and state payroll programs from the contract for conversion.

A sixth recommendation calls for competitive procurement for a single vendor's conversion of the DMV's computer system as economically justified.

Rose estimates these moves would save the state \$8 million during fiscal 1974-75. A second report, prepared by the office of the legislative analyst and presented by

A. Alan Post, recommended the Department of Motor Vehicles be allowed to seek a DP solution independent of the Teale contract. The report advised that the Teale budget be reduced by \$9.1 million.

#### Needs Guidance

The Assembly Ways and Means Committee decided it needed legal guidance on whether cutting the DMV free of Teale would affect its ability to later proceed with a possible litigation against IBM for its tardiness, and declined to adopt either recommendation.

The committee did, however, accept the second part of the legislative analyst's report, as amended, which charges the state with inappropriately spending money on the Department of Motor Vehicles and the Business and Transportation Agency on a number of questions concerning the Teale effort.

The questions seek answers as to when IBM will complete the conversion of all DMV programs, and the date on which the state will receive its DP equipment (Univac) at no cost.

Also, the report calls for a monthly estimate on the damages that the state will incur through failure to complete the DMV conversion as scheduled by July 1, the costs, and how the state will recover these damages.

Other questions include:

"Why should the state continue the Teale Center consolidation as planned originally?"

"When must DMV make a decision as to what kind of action it must take in light of continued conversion slippage?"

Both Rose and Post noted that failure to finish conversion by July 1 would necessitate a substantial expenditure for retention of the current computer system beyond that date.

Rose's report noted that after July 1 the monthly cost of the DMV's Univac equipment would be around \$219,000 rather

(Continued on Page 34)

## Judge Sees California Cases Distinct From IBM-Telex Ruling

LOS ANGELES — The final decision in the Telex-IBM case will not affect the procedures in the case against IBM filed by several California firms. U.S. District Judge Ray McNichols ruled here recently. McNichols noted this should be considered as a separate case and he would consider certification, which would open this decision to appeal.

An IBM spokesman said "the court's ruling is an encouraging sign that antitrust trials against IBM will need to have their own consideration of individual merits. They will not be able to use the decision in the IBM-Telex case, which is now under appeal, as a substitute for proving cases in court."

However, evidence used in other cases against IBM in the Telex and U.S. government suits, can be admitted by the firms involved, McNichols ruled.

IBM made a motion to seek a protective order for the first census, in order to lay the groundwork for allowing the papers to be considered for use in the case.

After arguments were presented by some of the plaintiffs on why they would prefer to wait for the Telex decision to begin discovery on their own, much of the hearing was devoted to procedural matters in what apparently is a somewhat unusual case.

The plaintiffs include California Computer Products, Hudson Leasing, Marshall, Transamerica and Memorex, each of which had filed separate suits against IBM.

The cases were assigned to one judge and some of the plaintiffs' attorneys questioned to what extent the cases would be consolidated.

Questions ranged from whether the firms, after establishing liability in their cases, would be liable for damages decided in their local districts.

McNichols said his inclination would be to leave the decision to him as to what extent the cases should be consolidated.

Indeed, the logistics are not simple. McNichols, who resides in Boise, Idaho, and normally operates out of Los Angeles when he's sitting in California, said the case had been moved to San Francisco. However, he intends to keep in touch with this case through his court clerk in Los Angeles.

### 50% Growth in 370s

## 360/370s Put at 19,000 by '76

NEWTON, Mass. — By the end of 1976, the total number of IBM 360/370 systems installed will reach almost 19,000, according to a study by International Data Corp.

This figure includes a decline of 45% in the number of 360 systems, and a growth of 10% in the number of 370s installed this year, the second 360/370 Migration study said.

The report noted an increase in the use of very large and very small computers, with the number of 360/370 and larger machines jumping from 13% of the total base in 1971 to 16% by 1976.

IDC estimated 370/158s and 168s alone will account for over half of the total dollar growth in 370s between 1972 and 1976.

Leasing companies will encounter increasing difficulty placing their 360 systems, coming off lease, the study continued, citing an IDC user survey which showed that 360 systems may be left with some 300 out of 950 systems comprising off lease in 1974.

The 370 leasing market, on the other hand, looks extremely promising, according to the report, for those firms able to obtain the necessary financing.

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## Vertical Integration Critical Cost Factor

# Dealers to Lift Microdata End-User Sales

By Molly Upton

Of the CW Staff

IRVINE, Calif.—Microdata Corp. is expanding the thrust of its end-user marketing program through the use of dealers.

In addition to its direct sales force which markets to the Fortune "1200," including large financial and insurance institutions, the dealer program allows Microdata to seek the smaller business user.

Microdata does not provide applications



Donald W. Fuller  
CW Photos by M. Upton

software. "We've found that the big companies are self-sufficient in this respect," observed President Donald W. Fuller.

The dealers, which are essentially service bureaus with applications software expertise, will be able to provide the user with this type of software, thus enabling Microdata to avoid "applications handholding."

End-user sales will play an increasing role in the firm's total mix of end-user and OEM business, Fuller said. For the fourth quarter ending in August, he expects Microdata sales to be 65% OEM and 35% end-user, but for the year they will be 80% OEM and 20% end-user.

However, for the next year, the mix should reach about 60% OEM and 40%

## Proposals Would Cut IBM-Teale Contract

(Continued from Page 33)

than the \$179,000 total year.

Several state legislators questioned the validity of the July 1 deadline as established by the Department of Finance as the last possible date for completion of conversion so the state could switch to staggered automobile registration by January 1.

Rose's report noted the Department of Finance had previously stated that program conversion beyond July 1 would mean postponing initiating the staggered registration for one year.

In addition to legal ramifications for the DMV and its plan for staggered registration, which also tie-in with smog control measures, the slippage on the DMV software raises pertinent questions on the reasons for letting off the contract with IBM.

Rose noted, "This slippage is significant because the administration elected not to enter into meaningful negotiation with all vendors seeking the Teale Center bid, on the grounds that the July 1 date restrained the procurement process, (although Chapter 1167, Statute of 1973 SB 804 which authorized the procurement of equipment and services to implement the Teale Center required such negotiations...)."

Post's report said, "Although the contract with IBM provides for maximum liability on the part of IBM in the amount of \$11.2 million, the contract does not appear to provide for such contingencies as the one where the state would incur by a failure on the part of IBM to meet the July 1 conversion date."

Father Smith, state EDP director, revealed the state has withheld about \$1 million in payments to IBM since March.



Dale Jacobson tests Series 9000 disk drives, an end-user, he said.

Microdata manufactures all its CPUs and peripherals except for chips, the printer mechanism and the CRT tube, he said. This vertical integration assures the

firm of being able to control cost as well as quality, Fuller said, noting reliability is a major factor, not only to customer satisfaction but to the profit and loss statement.

"Making our own peripherals impresses buyers that we have made a commitment to be around a while," Fuller said.

The firm plans to stay in the OEM market for its separate peripherals and has established a network of sales representatives.

Over the past few years there's been a change in attitude on the part of many large users, Fuller said. "The credibility gap seems to have disappeared," and big users no longer hesitate to buy from small minicomputer firms.

Microdata does not lease its machines, but concentrates rather on applying the techniques it learned in the OEM business of offering an attractive price/performance package, he said.



Jack Loisel tests Series 6000 tape drives.



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## To Exchange Information, Products

# USSR, Sperry Sign Cooperative Projects Agreement

By Igor Lobanov

Special to Computerworld

MOSCOW — The Sperry Rand Corp. has concluded an agreement on cooperation with the USSR Council of Ministers' State Committee for Science and Technology.

The agreement calls for the development of business relations with Soviet organizations in almost every Sperry Rand line — commercial computing systems, scientific computing systems and terminals, office equipment, hydraulic systems and units, navigation instruments and consumer goods. Both sides agreed to exchange information, documents, product samples and test results.

They will also exchange delegations, sponsor symposiums, lectures and exhibitions and work together on programs and projects.

The agreement was signed by Dzhermen Gvishiani, vice-chairman of the state com-

mmittee, and Paul Lyet, president of the board of directors of Sperry Rand.

"The State Committee for Science and Technology," said Gvishiani, "signed this agreement on behalf of a number of Soviet industrial ministries which are in-

major agreements in the development of scientific-technical cooperation with large American firms," he noted.

"I think this agreement is a result of mutual understanding," Lyet said.

"We see a great deal of opportunity here for Sperry Rand, through the use of its technology and through the use of its facilities and capabilities, to participate in what we would say is a very profitable and growing market," Lyet said. "One of the things we are hoping is that we will be able to learn more about what Soviet techniques can contribute to Sperry Rand. Hopefully, this cooperation will be blended into products which will be sold not only in the Soviet Union but in other parts of the world as well."

Lyet spoke favorably of the need to grant the Soviet Union the most-favored nation status in trade. "My opinion is that we should be developing every opportunity to trade with the Soviet

Union," he stated. "We feel the largest step forward we could make would be to have a trade bill with the most-favored nation privilege extended to the Soviet Union."

Lyet, who is a member of the President's Export Council and the Emergency Committee for American Trade, said he is striving to get "a prime environment" for business with the Soviet Union, "because we cannot really do a great deal of business until it is possible for the Soviet Union to sell its products in the U.S." Sperry Rand, in keeping with this agreement, has recently opened a major exhibition of its products in Sokolniki Park here, including an operating 1106 computer system.

## International News

interested in developing cooperation with Sperry Rand. We believe there are great opportunities for mutually beneficial cooperation as well as economic ties.

"The attitude of the company's management and engineers, their readiness to organize an exhibition of their products in Moscow, testify to the serious intentions of our partners," he said.

"For these reasons we assess the agreement with Sperry Rand as one of the

## USSR Seeking More DP Plants

By Shukan Computer

Special to Computerworld

TOKYO — In an effort to upgrade its market through the introduction of foreign techniques, the Soviet Union has stepped up talks with Japan concerning the establishment of manufacturing plants in the USSR.

With U.S. and Japanese manufacturers competing in the areas of core memory, magnetic heads and disks and batteries, there are reports of some cases where "negotiations are [being carried out] through Japan, but the products are U.S.-made." In other words, Japanese trading firms are negotiating to establish plants of U.S. makers in the Soviet Union.

All this, however, has raised the specter of coming into conflict with the Coordinating Committee for Export to Communist Areas (Cocom) embargo list. For this reason, those makers whose negotiations are partly settled have applied to the Cocom secretariat in Paris for export licenses, but have not yet received them.

Similar cases are surfacing in connection with inquiries regarding Chinese manufacturing plants in the USSR. Allied industries are planning to settle differences within the Electronic Machine Industry Association and to approach participating nations, through the Japanese Ministry of International Trade and Industry (Mit) for a relaxation of the embargo. It is hoped the Cocom list will be reviewed and relief obtained within the year.

## IBM Orders Component From Australian Firm

SYDNEY, Australia — IBM Australia has placed an initial order for a recently developed aluminum die-casting component from an undisclosed large die-casting company based here.

The component, according to a report in the *Australian Financial Review*, will be sent to the U.S. for testing.

The computer industry generally greeted the announcement with skepticism, viewing the move as a sop to the Australian Government which is still, though less forceful, pushing vendors to purchase or manufacture some components locally.

## Qantas, BA Link Centers

LONDON — British Airways and Qantas, the Australian airline, have established one of the world's most extensive commercial computer networks, linking their centers here and in Sydney.

The principal connection, according to the *London Times*, is via the Indian Ocean communications satellite, backed by the Pacific Ocean satellite, land-line microwave across the U.S. and Atlantic Ocean cable.

## Norden introduces the first operational Millimeter Wave Radio.



For the first time, there is a practical alternative to cable for short-haul transmission. It's the first in a family of telecommunication products now being introduced by the Norden Division of United Aircraft Corporation.

The new Norden Millimeter Wave Radio operates at high frequencies soon to be opened for local transmission. Available now — under FCC developmental license pending final rule-making — Norden radios are already entering service.

You simply mount one Norden radio on top of a building or mast (it weighs about 30 lbs. and takes minutes to install). Put a second radio on another building. Then transmit messages and computer data between them, simultaneously in both directions.

### 22 GHz and 38 GHz Models

Produced in 22 GHz and 38 GHz models, the Norden radio is a solid-state, full-duplex transmitter-receiver system. It carries a digital bit stream at T1 or T2 rates. Power requirements are

low, and the radio runs off commonly used battery plants, or 115V AC. Humidity and extreme temperatures won't bother it.

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This remarkable new radio is part of a Norden family of telecommunication products, including: a time division multiplexer with four inputs and an output of 6.3 Mb/s, a voice multiplexer with 24 inputs and an output of 1.544 Mb/s, and a data time division multiplexer with 23 inputs and an output of 1.544 Mb/s.

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## 2nd Phase Limited to 3

# Canada Narrows Bids for TP System

By Gordon D. Hutchinson

**Special to Computerworld**  
OTTAWA, Ont. — The Canadian government has narrowed the bidding for a replacement \$52 million message switching system for the Armed Services to three firms: Burroughs Business Machines Ltd., Canadian National Telecommunications and Sperry Univac. All have met qualifying specifications for the

amination of the proposals.

Bidders were required to meet minimum specifications on technical performance, operational suitability, price and Canadian industrial involvement.

The project has been labeled Samson — strategic automatic message switching operational network — and is similar in application to Autodin. It is to replace an antiquated torn-tape message system which has been used since the Second World War.

A final selection and contract award is expected to take place

## Computerhouse Rents DP 'Studios'

AMSTERDAM, The Netherlands — A new concept in computer service is being implemented here under the auspices of Comunitate Samenwerkende Rekenmachines B.V. (CSR).

CSR has moved to a new facility, housing an IBM 360/20 (32KB), an IBM 370/125 (128KB), a Burroughs 33700 (200KB) for on-line real-time applications and a Siemens 4094-135 (128KB).

Within the facility, called Computerhouse, CSR will continue its current service and software facilities, as well as rent "computer studios" with terminals linked to the central computer system.

These studios will be available for hire, permanently or temporarily, by firms using the CSR systems, thereby affording them a cost service package which can be used on an hourly basis. CSR also offers firms the use of a portion of the facilities of a computer service bureau, software house, keypunch center, training institute and meeting and instruction rooms.

## International News

high-level network portion of the system.

Strategic message switching computers are needed for the system, plus 15 minis to act as communications controllers and concentrators.

This portion of the job is valued at approximately \$20 million.

Five bidders submitted tenders for the project late last year. Canadian Pacific, Telecommunications and Honeywell Controls were knocked out of the competition after an in-depth ex-

## Airport Controls

### Passenger Data

Special to Computerworld

RINGWAY AIRPORT, England — An airport extension designed to handle Jumbo-Jet airliners has computerized its passenger information and building maintenance systems.

Handling the passenger side is a GEC 2050 computer with 40K bits of core and 160K of disk backup.

Five passenger lounges are equipped with Infolux information display boards, with smaller versions at each passenger gate and about 35 CRTs at other strategic points throughout the terminal, with the whole system linked to a passenger information control unit.

Backing the day-to-day operation of the system is a stored weekly timetable which is prepared off-line on paper tape, and updatings are carried out either on-line through a CRT, or off-line by paper tape.

The building control system was supplied by Honeywell with a System 6 Selectographic Supervisory Data Center monitoring the heating and ventilating system. Through the system there is centralized control and logging of status at up to 1,000 points, including annunciation of alarm conditions.

There is also an audio system through which the operator can direct maintenance personnel to any given spot.

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## Survey Finds Many Postponing Installations

# Recession Puts Damper on Japanese DP Development

By Shukan Computer  
Special to Computerworld

TOKYO — Almost 20% of companies surveyed recently are postponing or cancelling new computer installations because of Japan's recession.

Sixty percent of the 674 survey respondents are postponing DP operations according to pre-arranged plans despite the recession, according to the Japan Electronic Computer Center (JECC), which conducted the research.

The real estate and paper in-

dustries indicated the heaviest outlays in DP expenditures; little difference was noted in whether the users had Japanese or imported equipment.

Thirty-two companies, or 4.7% of the respondents, were postponing new installations, while 102 companies — 15.1% — indicated additional equipment in existing centers was to be delayed.

The conversion of low-priority tasks to manual operation involved 76 companies or 11.3%; the cessation of computer utili-

zation altogether, nine companies; and returns of portions of the hardware, four companies. Seven companies are

measure being taken is raising the efficiency of computer utilization; 507 firms or 75.2% have some plan to improve operations.

The general trend does not show big differences when the firms are classified by capital or scale of total sales, the survey noted.

Classifying users into those using domestic equipment and those using imports, many were found to be proceeding with pre-arranged DP plans regardless of the recession: 61.5% for domes-

tic users and 57.4% for import users.

Those making postponements — although postponing emergencies — come to 14.3% for the domestic users as against 16.3% for the foreign. However, overall postponement of new installations is 6.1% among users of domestic equipment and 4.7% among import users.

Classified by industry, those replying that they are generally postponing new installations are the real estate business (33%), pulp, paper and paper processing industry (14.6%), electrical machinery manufacturers (13.7%) and general machine manufacturers (10.4%). Those making postponements altogether — excepting emergencies — are the mining industry, petroleum producers, petroleum products manufacturers and manufacturers of transportation equipment.

### Why Computerize?

As the principal factors influencing the use of DP, coping with increased production prices (50.1%) and the streamlining of simple business via automation (45%) were cited with overwhelming frequency, followed by the rapid acquisition of management data (39.5%), cost reduction while meeting rising personnel costs (29.6%), automation in response to increasingly complex office procedures (25%) and the coverage of labor shortages (22.9%).

On the other hand, such motivations for adoption as MIS (19.3%) and the qualitative improvement of management (18.3%) were also cited by a considerable number.

Regarding the introduction of DP, when recommendations come from parent or affiliated companies, they are limited to industries having close parent-company-subcontractor relationships, the survey said. Improvement of customer service is a primary motivation in the financial business (23.5%), insurance business (40%) and in data processing services (33.3%).

### Univac Acquires On-Line

HONG KONG — Sperry Univac has acquired the marketing arm of On-Line Operations, in Hong Kong and Singapore, from Wheelock Marden & Co.

Under the terms of the agreement, all marketing and support activities in the major areas previously served by On-Line Holdings Ltd. will now be performed by Univac's Asia-American Division.

On-Line Holdings had been providing marketing and related services for users of Univac computers and peripherals in Hong Kong and Singapore.

## International News

switching to the use of service bureaus; conversely, 36 firms are undertaking work from the outside — each devising its respective conversion plan. Probably the strongest counter-

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## CATV Design Program Selects Routes, Equipment, Materials

NEW YORK - Despite published reports of political and economic "set-backs" in the future growth and development of large-scale cable TV systems in densely populated areas, Network Analysis Corp. (NAC) is experiencing a 47% gain in its installation volume, according to William W. Williams, vice-president of marketing.

NAC, which specializes in designing cable systems in already built-up metropolitan areas, saves clients money through computer-aided selection of routes, equipment and materials, Williams said. With its design, NAC's computer program allows the firm to produce entire CATV systems from the ground up in less than half the time it would take using the more conventional manual approach.

This saves clients not only time, but costs as well, to the tune of 8% to 40% with savings.

Costs that have slowed down cable installations recently have resulted from

new FCC requirements - a minimum capacity of 20 channels and the provisional capability of two-way service.

Secondly, most cables have to run underground, meaning new cable operators have to commit themselves much sooner to far-reaching technical and financial decisions at the planning stage.

Next, a rapidly developed cable system must deal with variables such as cross-modulation, noise, band-width, temperature variations, alternate routes and component specifications. Only by simultaneously considering and specifying all design parameters can the most money be saved.

"Human designers have not been able to do this," Williams said.

"Because the computer doesn't rely on human intuition or feel wedged to routine approaches that may have been used successfully in the past, it is free to select the best route based on the facts pertinent to the job at hand," he concluded.

## Expansions

Cambridge Memories, Inc. plans to consolidate its major Massachusetts operations in the Bedford Research Park, Mass., where it already occupies a 55,000-square-foot building. The company will lease an additional 65,000-square-foot plant.

Applied Data Communications has expanded its manufacturing facilities to an adjacent building, adding 5,000 square feet for engineering and production.

Electronic Memories and Magnetics Corp.'s Military Products Division has added 20,000 square feet to its facilities to accommodate increased production volume.

Memory Technology, Inc. has moved to corporate facilities at 533 Boston Post Road, Wayland, Mass.

Sperry Univac has acquired an additional 131,000-square-foot-manufacturing facility in Naples, Italy, for the production of data entry equipment.

Burroughs Corp. plans to construct a business forms manufacturing plant in Rocky Mount, Va.

Cop Systems, Inc. has recently moved its corporate headquarters into larger facilities on Long Island at 175 I.U. Willets Road, Albertson, N.Y.

## INDUSTRY APPLICATION STUDIES

IDC is pleased to announce

the publication of the first in a series of studies on the applications of computers in various industries.

The first study, "Computer Applications in Manufacturing,"

is now available.

Subsequent studies will be published

quarterly, starting in July.

For further information, contact

Walter E. Midom, Vice President

International Data Corp.

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POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS	POSITION ANNOUNCEMENTS
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## REI's 2nd Quarter Gains Don't Offset Loss in 1st

DALLAS — Although Recognition Equipment, Inc. (REI) scored a profitable second quarter, the gains were not sufficient to offset losses in the first period, with a resulting six month loss.

Second quarter earnings of \$52,000 or 11 cents a share, compared with a loss of \$1 million or 21 cents a share in the first, brought REI's year-to-date net deeply in almost \$1 million charge for costs above the firm's contract price for its Trace system.

In addition, REI showed other charges of \$285,000 for provision for doubtful receivables and \$235,000 for losses on translation of currencies.

These charges were partially offset by unusually high revenues from outright purchases of equipment during the quarter, observed President Jay Rodney Rosen.

Quarterly revenues rose to \$12.3 million from \$10.5 million in the year-ago period.

### Revenues Up 42% At National CSS

NORWALK, Conn. — National CSS, Inc. reported for the year ended Feb. 28, 1974 revenues of \$1.8 million or \$1.62 a share compared with \$1.5 million or \$1.37 a share last year.

Income before special credits more than doubled to \$1.6 million or \$1.43 a share compared with \$779,026 or 72 cents a share.

Revenues rose to \$23.7 million from \$16.7 million in 1973.

In the fourth quarter, the firm earned \$598,000 or 44 cents a share, increasing 35 percent over credit, compared with \$464,119 or 43 cents a share last year when there was a \$23,985 tax credit.

Revenues jumped to \$6.8 million from \$4.6 million.

The firm's impact on earnings and revenues from the acquisition of TBS Computer Centers, which occurred during the fourth quarter, will not be realized until the next quarter, said President Richard H. Orenstein.

In the six months, REI lost \$721,000 or 14 cents a share compared with a loss of \$564,000 or 11 cents a share the same 1973 period.

Revenues totaled \$19.1 million, up from \$18 million last year.

#### Equipment Shipped

The purchase value of equipment shipped in the first half amounted to \$12.1 million, up from \$14.9 million in the 1973 period.

As of April 30, the backlog of signed contracts was \$22.8 million in purchase value, compared with \$24 million last year.

## AMS Investments Near \$3 Million

SUNNYVALE, Calif. — Advanced Memory Systems, Inc. (AMS) received a \$2.95 million infusion of capital through investments by RCA Corp. and two other firms.

An additional agreement calls for AMS to develop MOS memories over a three-year period and includes delivery of about 700,000 units.

Under the agreement AMS will proceed with development based on RCA's complementary metal-oxide semiconductors (CMOS) and silicon-on-sapphire (SOS) technology, including RCA's CA4061A 256-bit random access memory and the recently announced CMOS microprocessor.

The 700,000 chips will enable RCA to enter the memory market and act as a second source for AMS, according to Bernard Vonderhaar, vice-president and general manager of RCA's Solid State Division.

RCA made a \$2 million investment in AMS through the purchase of 20,000 shares of nonvoting preferred stock, while Bessemer Securities Corp. bought 7,500 shares of voting preferred stock for \$570,000 and Sutter Hill Ventures purchased 2,000 shares for \$200,000.

Both series of stocks are subject to investment letter restrictions and are convertible directly or indirectly into common stock at \$5 per share.

\$14.4 million in the 1973 period.

Results of operations for the periods are not entirely comparable, observed President Raymond P. Kursan, because sales from older equipment are reflected in the company's statement of operations since the third quarter of fiscal 1973, when the domestic residual value account was realized.

Prior to this, such sales were reflected as a recovery of the residual value on the balance sheet.

Also, there has been a change in the classification of credit for interest waived by lessees.

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### 2 DOUBLE CAPACITY

IBM: One meg

CIG: Two meg's

The CIG/145 has dual gates each of which contains up to a full megabyte of main memory. Up to 2,048K bytes in one compact unit. CIG's double capacity. Twice the memory IBM can give you.

### 3 MODEL CHANGES

Every CIG/145 memory system includes the proper model change required to upgrade your 145 CPU to its new storage capacity. So you save twice. Once on the memory system. Once on the model change. Both from CIG.

### 4 REALLOCATION

The CIG/145 will reallocate any segment of main memory in 128K increments. So if you do have a problem, you move it where it hurts you least. In fact, your CIG/145 system will even cover-up for failing IBM memory. All under operator control.

### 5 INVISIBLE MEMORY

Throw a switch and we'll disappear. Really! CIG's on-line/off-line switch will make your 145 think its CIG memory was never there. So if IBM has a problem, they can't point at us, 'cause they can't find us. We're invisible!

### 6 ECCL

CIG's Error Checking and Correction Logic. It keeps your system up even if the chips are down. In fact, the CIG/145 can continue to operate with an entire 32K bit memory card out. Because each card contributes only one bit per word. And our ECCL automatically corrects all single bit errors.

### 7 FOUR LEVEL DIAGNOSTICS

The CIG/145 allows four levels of integrated diagnostic support: 1) Off-line operation from the integral test panel. 2) Execution of CIG stand alone diagnostics. 3) IBM and CIG microdiagnostics executed from the 3145's microinstruction processor. 4) IBM on-line diagnostics such as OTLEP (Online Test Executive Program) and ASCP (Automatic System Checkout Program).

IBM offers only the last two levels of diagnostic support, both of which require use of the central processor to execute.

Which means your operations stop when IBM's diagnostics start.

### 8 SERVICE

We're memory specialists. So if your CIG memory system ever does require service, you get a CIG memory expert. Not a generalist like IBM might send. Your CIG memory spares are on-site, too. Not at some remote depot. That's one of the ways we keep 650 CIG memory customers happy.

### 9 PACKAGE LEASING

CIG not only gives you 145 memory, we can lease you the mainframe and all your disc and tape peripherals to boot. That way you get everything from one source. All the equipment. And all the savings.

### 10 CIG/145. ITS BEST FEATURE IS US.

As we said before, you don't keep 650 memory customers happy by being charming. You keep them happy with innovative products backed by solid performance and service.

CIG is the world's leading independent memory supplier with sales, service, and systems engineering support available throughout the United States, Canada and Europe.

In addition to our 360/370 and Univac memory systems, other CIG products and services include 360/370 package leasing, plug-compatible block multiplexer and selector channels, and IBM plug-compatible disc and tape I/O subsystems. What we've done for other people, we know we can do for you. Check us out. And call us in.

**CIG**  
**CIG COMPUTER PRODUCTS, INC.**

A Subsidiary of Computer Investors Group, Inc.

1351 Washington Blvd., Stamford, Conn. 06902

Dear CIG,

I'd like to check your prices. Have your rep call me at \_\_\_\_\_.

Send a copy of "Add On Memory for the 370/145".

Send info on other CIG Memory for the 360/370.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



When you're  
the Top Cat in Add-On Memory,  
you never stop  
improving the breed.